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December 16, 2008

U.S. EPA Region 10
ATT: PCS Data Entry Team
1200 Sixth Avenue, OEC-133
Seattle, Washington 98101

Dear Sir or Madam

Enclosed are the EPA reports for Schedule of Compliance for Total Phosphorus permit number: ID-002803-7 page 9 table: 3

If you have any questions, please contact me at 208 -463- 6610, or e-mail KSHAW@ Sorrento Lactalis.com

Sincerely,
Kurt Shaw
Wastewater Manager
Sorrento Lactalis, Inc.

1/19/09

December 15, 2008

PREPARED FOR:

Sorrento-Lactalis
Nampa, Idaho

PREPARED BY:

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Evaluation of the Wastewater Treatment Plant for Achieving Final Effluent Phosphorus Discharge Limit Sorrento-Lactalis Nampa, Idaho

Symbiont
Project No. W092576

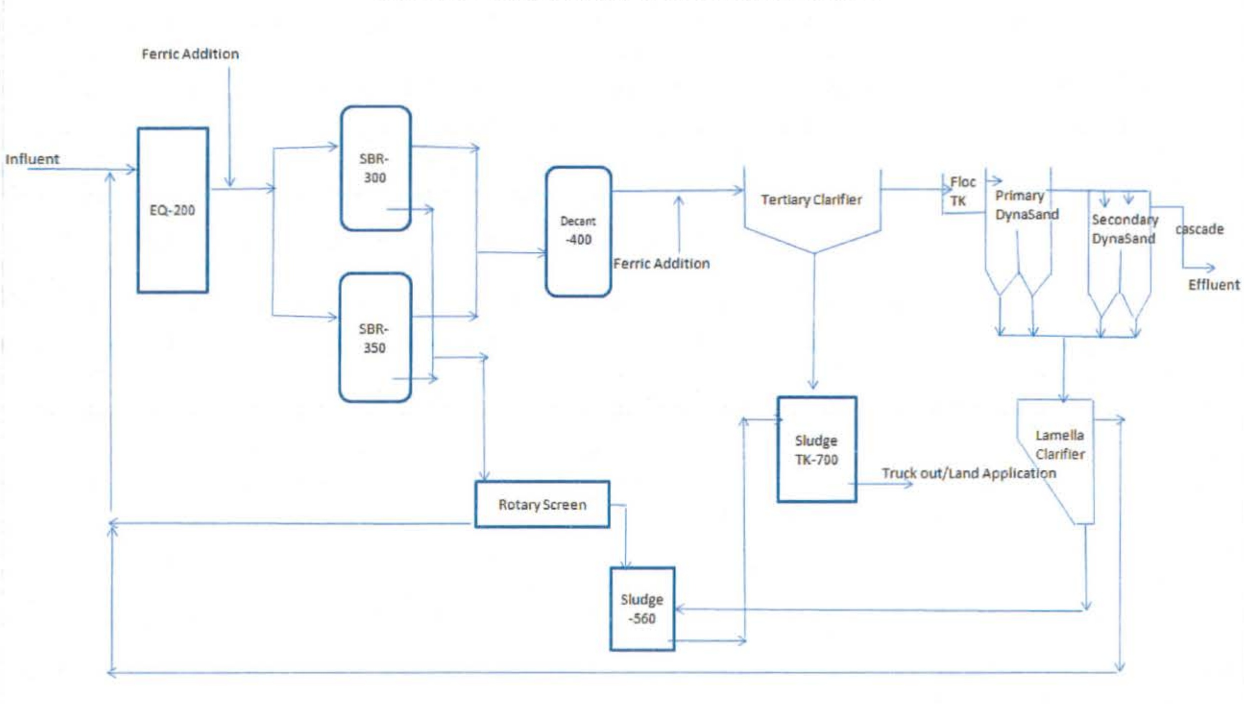
A. INTRODUCTION

The new wastewater treatment facilities at the Sorrento-Lactalis located in Nampa, Idaho began operating in December 2005. The new wastewater treatment facilities consist of an equalization tank (EQ); two (2) activated sludge sequential batch reactors (SBRs); a decant balance tank; chemical addition and tertiary clarification; filtration with Dual DynaSand D2 filter; and a cascade type reaeration unit. The treated effluent is discharged to the Purdam Drain.

Additionally, a Lamella clarifier is used to capture the solid rejected from the Dual DynaSand D2 filter. Sludge generated from the activated sludge SBR is thickened by a rotary screen and stored in a sludge tank prior to being trucked to land application sites.

The process flow diagram is illustrated in Figure 1.

Figure 1: Lactalis-Sorrento_Nampa-ID WWTP Flow Diagram



The Sorrento-Lactalis wastewater treatment facilities were designed to achieve very low levels of total phosphorus in the effluent. An anaerobic/aerobic time sequence was designed and installed in the SBR program to perform enhanced biological phosphorus removal (EBPR). The chemical addition system and tertiary clarifier were designed to precipitate and remove soluble phosphorus. The Dual DynaSand D2 filtration process was designed to capture particulate phosphorus remaining in the clarifier effluent. Flocculation equipment was also designed upstream of the effluent filters, however, the plant is not currently utilizing this feature.

The effluent discharge permit is authorized under the National Pollutant Discharge Elimination System (NPDES), Permit No. ID-002803-7. The discharge permit was issued on December 14, 2005 by the USEPA Region 10. The permit will expire on October 31, 2010. The NPDES permit is attached as Appendix A.

Pursuant to the NPDES permit, Sorrento-Lactalis wastewater treatment effluent is required to meet the interim monthly average and daily maximum total phosphorus concentrations of 0.48 and 0.96 mg/L, respectively. Monthly average and daily maximum phosphorus effluent limits of 0.07 and 0.14 mg/L, respectively, will be effective on May 1, 2010. The permit also includes mass limitations for effluent phosphorus based on an average flow of 0.5 mgd (500,000 gallons per day). Table 1 lists the total phosphorus effluent limitations and monitoring requirements provided in the NPDES permit.

Table 1
Effluent Phosphorus Limitations and Monitoring Requirements

		Effluent Limitations		Monitoring Requirements	
Parameter	Units	Average Monthly	Maximum Daily	Sample Frequency	Sample Type
Total Phosphorus as P (Interim)	mg/L	0.48	0.96	monthly	24-hour composite
	lbs/day	2.00	4.02		
Total Phosphorus as P (Final)	mg/L	0.070	0.140	monthly	24-hour composite
	lbs/day	0.29	0.58		

Further plant expansion is expected to increase average plant flow from 0.5 to 0.7 mgd. If this occurs, the mass based limits will effectively reduce the required monthly average and daily maximum total phosphorus concentration levels to 0.05 and 0.10 mg/L, respectively.

The NPDES permit contains a schedule of compliance (SOC) for achieving the final effluent limitations for total phosphorus. The SOC includes the following elements:

1. An investigation to identify the sources of phosphorus and potential measures to reduce phosphorus loading in the influent to the wastewater treatment plant.

2. A receiving water fate and transport study for phosphorus.

3. An investigation of the feasibility of methods to reduce phosphorus concentrations in the outfall.

4. Design and construction of measures to reduce phosphorus discharges and meet the final effluent limitations for total phosphorus.

Symbiont has been retained to assist Sorrento-Lactalis with the first and third elements of the SOC.

B. OBJECTIVES

Symbiont evaluated the existing wastewater treatment system capacity for phosphorus removal. The evaluation included:

1. Developing a phosphorus mass balance for the wastewater treatment system. As part of the mass balance, the major sources of phosphorus in the influent were identified.

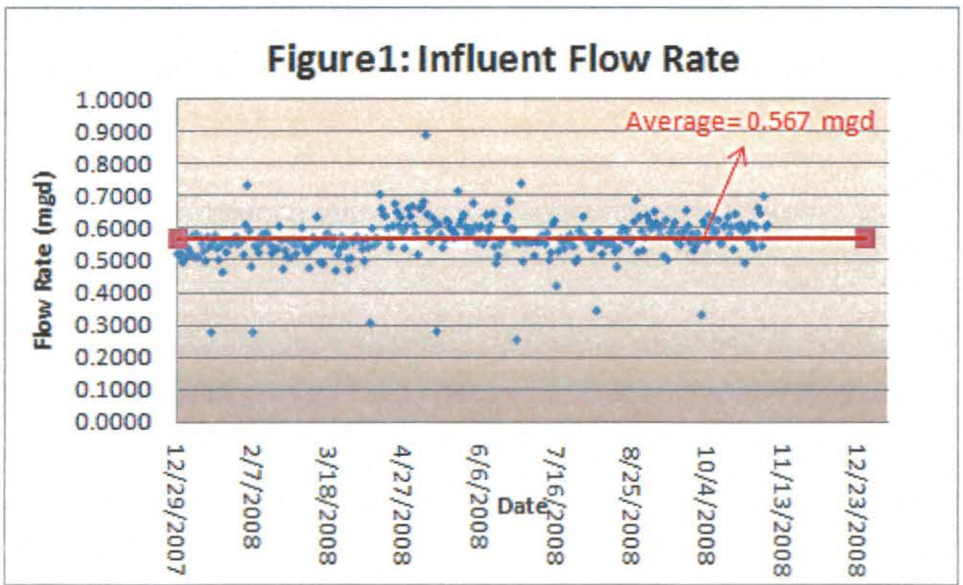
2. Working with Sorrento staff to optimize the current biological phosphorus removal process and reduce the usage of chemicals for precipitation of phosphorus.

3. Working with Sorrento to optimize the current effluent filtration system.

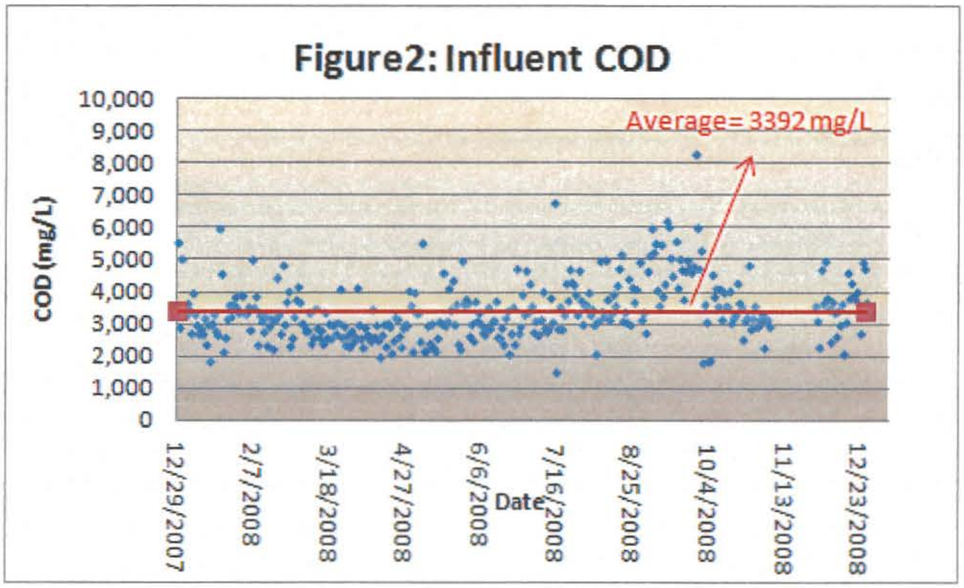
Additionally, after efforts to minimize phosphorus inputs and optimization of the treatment processes are complete, Symbiont will evaluate the capacity of the existing wastewater treatment system to meet the final total phosphorus effluent limitations.

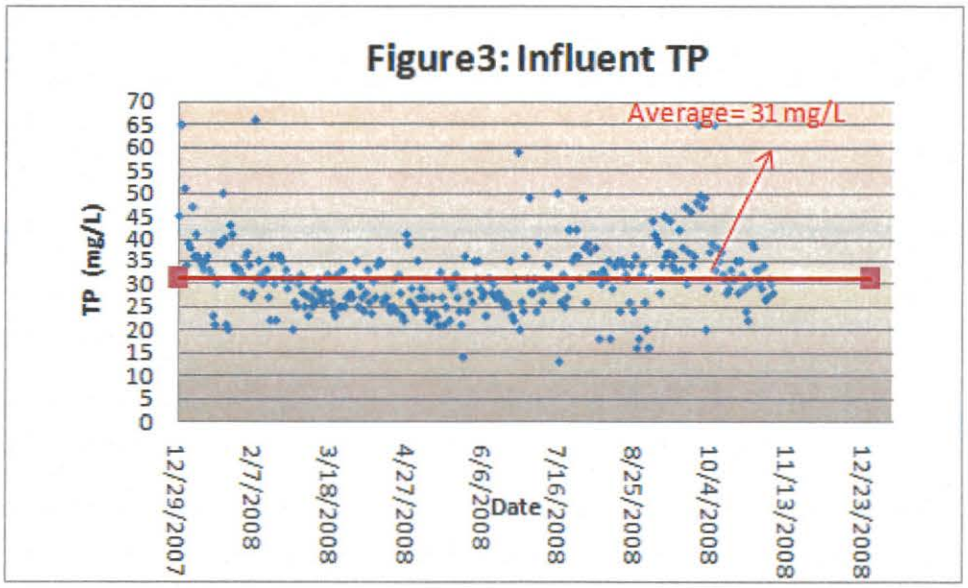
C. HISTORICAL WASTEWATER TREATMENT PERFORMANCE AND EVALUATION

The Sorrento-Lactalis wastewater treatment plant (WWTP) started to operate in December 2005. The average wastewater influent rate has been 0.57 million gallons per day (mgd) (year of 2008). Figure 1 shows the influent flow rate profile and indicates that the influent wastewater can go up to 0.75 mgd, even 0.90 mgd.



The average influent COD concentration (year of 2008) was approximately 3,400 mg/L (Figure 2), which is equivalent to 16,200 lbs per day (lbs/day). The average influent total phosphorus concentration (year of 2008) was approximately 31 mg/L as P (Figure 3) which is equivalent to approximately 147 lbs/day.





Filamentous organisms proliferated in the SBR activated sludge right after the startup resulting in excessive sludge in the SBR decant. Though the excess sludge was captured in the tertiary clarifier, additional amounts of chemicals, including polymer and ferric chloride (ferric) were needed. The additional chemicals were necessary to maintain effluent compliance. The increased solids loading quickly plugged the downstream sand filter.

The average effluent flow rate was 0.66 mgd (Figure 4), which include process waters, such as rotary screen spray water used in the wastewater treatment plant. The average effluent phosphorus concentration in the past 3 years (data from 2006 – 2008) was 0.22 mg/L with a peak of 0.83 mg/L in January 2008 (Figure 5). The effluent phosphorus concentrations meet both monthly average (0.48 mg/L) and daily maximum (0.96 mg/L) limits. The average effluent total phosphorus load was 1.14 lbs/day with a peak of 4.35 lbs/day (Figure 6). On two occasions (January 2008 and September 2008) the effluent total phosphorus discharge exceeded the daily maximum limit of 4.02 lbs/day.

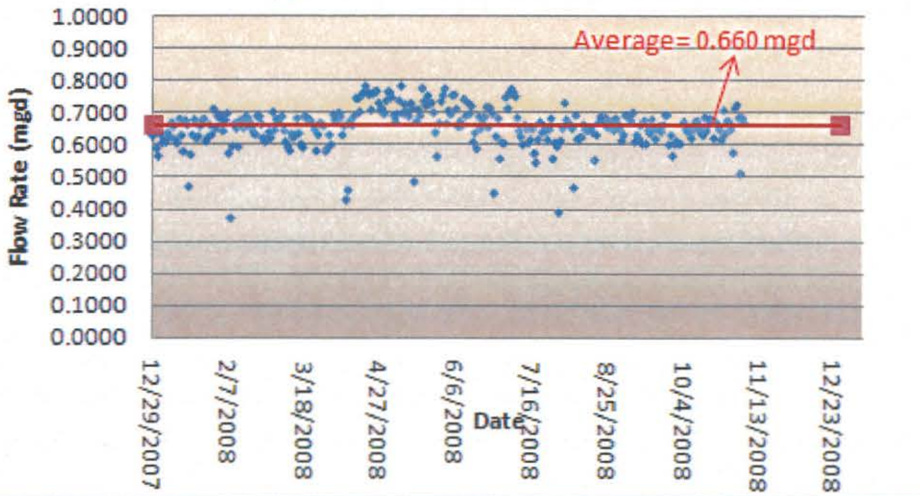


Figure 4: Final Effluent Flow Rate

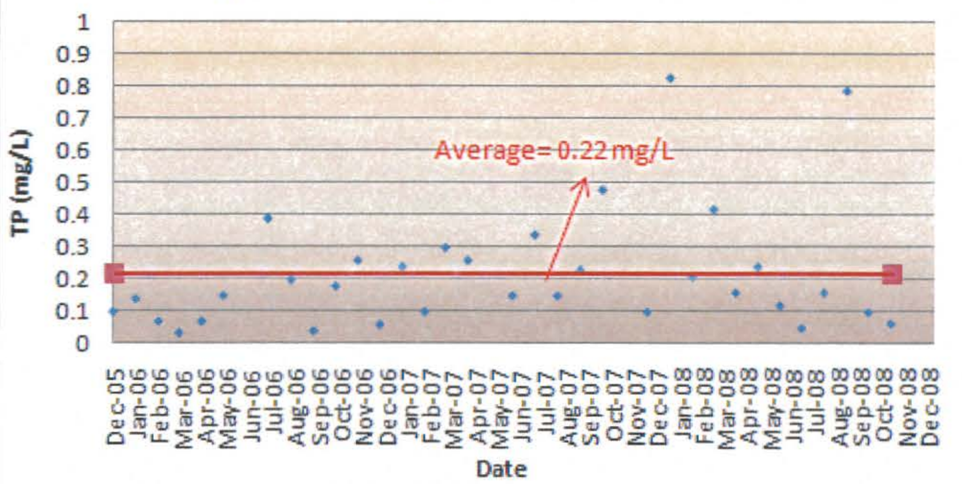


Figure 5: Average Effluent TP Concentration

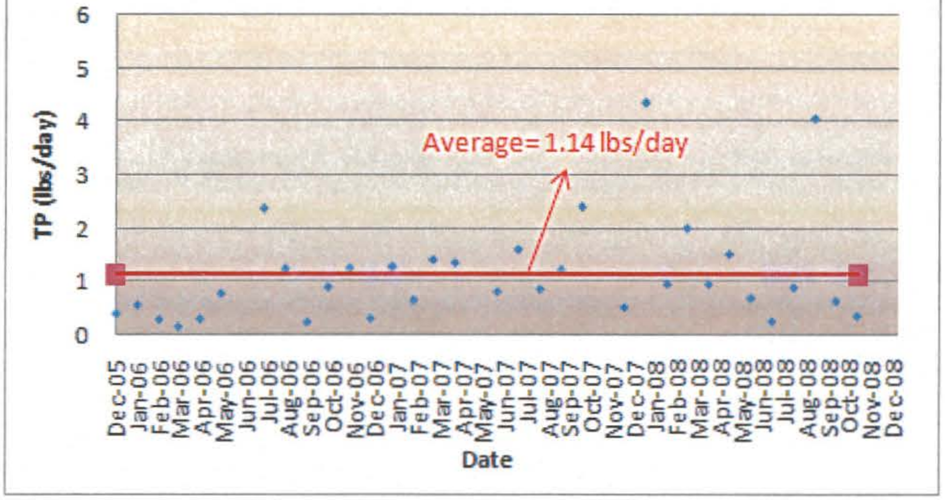
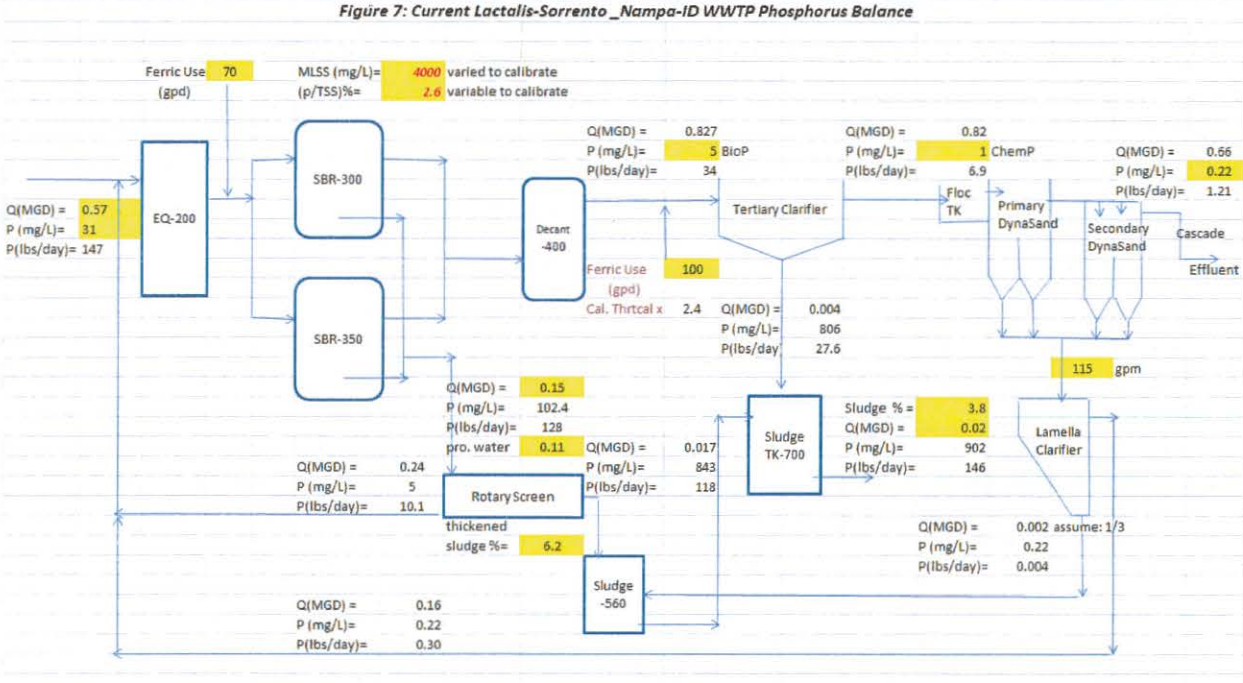


Figure 6: Average Effluent TP Loading

Figure 7 shows the phosphorus mass-balance through the treatment plant. The total phosphorus input was approximately 147 lbs/day from the production plant, based on a flow of 0.57 mgd. Approximately 99.5% of phosphorus was removed from the raw wastewater. An average of 0.22 mg/L total phosphorus (1.21 lbs/day) was discharged to the Purdam Drain. Most of the phosphorus (146 lbs/day) was bound with solids in the sludge tank which was eventually hauled off-site for the land application.

Figure 7: Current Lactalis-Sorrento _Nampa-ID WWTP Phosphorus Balance

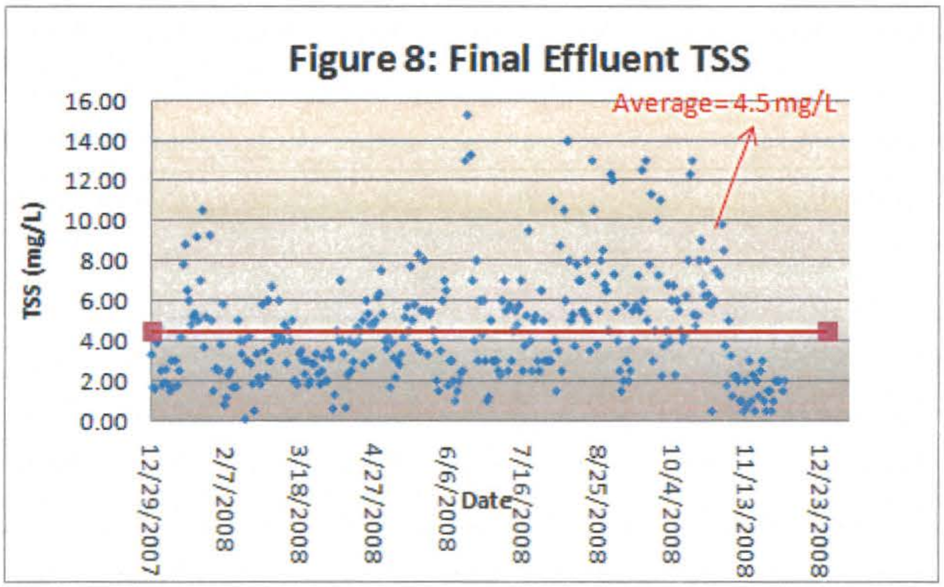


Approximately 113 lbs per day of phosphorus is removed across the SBR system. It is not possible to differentiate between that removed by biological uptake or chemical precipitation.

However, we estimate that the minimum amount of phosphorus required for biological growth (assuming no luxury uptake) is approximately 95 lbs/day. Most if not all of the phosphorus removal appears to be the result of biological uptake. Therefore, addition of ferric chloride to the SBRs may not be providing a significant benefit. In addition to the costs associated with adding ferric chloride to the SBRs, ferric addition in the SBR could be detrimental to EBPR by limiting the amount of phosphorus that is in a form that could be taken up by the microorganisms.

The final effluent total suspended solids (TSS) averaged 4.5 mg/L and ranged from 1.0 mg/L to 15.0 mg/L (Figure 8). Effluent TSS will contribute to effluent total phosphorus concentration. The biological phosphorus content (p/TSS %) is approximately 1.5 to 2.5% in a conventional activated sludge and 3 to 6% in EBPR systems. Similarly, any solids in the form of ferric phosphate (about 20% phosphorus by weight) that pass through the filter will also contribute to effluent total phosphorus concentrations. These factors illustrate the importance of minimizing effluent TSS in order to achieve the lowest possible effluent total phosphorus level.

With the exception of two exceedances of the daily maximum concentration limit, the Sorrento-Lactalis WWTP has met the current interim discharge limits for total phosphorus. However, as historically operated the WWTP system would not meet a future total phosphorus discharge limit of either 0.07 mg/L or 0.05 mg/L.



D. PHOSPHORUS SOURCE IDENTIFICATION AND MINIMIZATION PLAN

The sources of phosphorus in the WWTP influent were identified and reviewed to develop a phosphorus minimization plan. The total influent phosphorus is mainly attributable to the loss of milk/cheese product and the phosphorus-based cleaning chemicals. The phosphorus-based chemical usage in the Sorrento-Lactalis production plant is listed in Table 2. Phosphorus-based chemicals (information obtained from chemical supplier) indicate that the washing chemicals contribute approximately 80 lbs/day of total phosphorus, which is equivalent to approximately

54% of the total phosphorus load. The Ultrasil 75 appears to be the major phosphorus contributor in the wash chemicals.

Table 2 Washing Chemical Contain Phosphorus					
Chemical	Phosphorus % by weight	Lbs /gallon	Daily Usage (gpd)	lbs/day to wwtp	% contribute to total P input
Evapokleene	1	10.2	190	19.38	24.4%
LC-30 Heavy Duty	41	10.56	0.75	3.25	4%
Ultrasil 75	21	11.3	24	56.96	71.6%
Total				79.59	100%

Sorrento-Lactalis is working with the chemical supplier to gradually replace the Ultrasil 75 with a non-phosphorus chemical. With the replacement of Ultrasil 75, the total influent phosphorus load could be reduced from current 147 lbs/day to 90 lbs/day (equivalent to 39% reduction) based on an influent flow of 0.57 mgd. The corresponding reduction in influent phosphorus concentration would be from 31 mg/L to 19 mg/L. According to the Sorrento-Lactalis, the Ultrasil 75 is expected to be replaced in early 2009.

The substitution of phosphorus-rich cleaning chemical would not necessary result in a proportional reduction in the final effluent phosphorus concentration. However, eliminating the source of influent phosphorus is expected to reduce chemical requirements. The substitution of phosphorus rich chemicals is also expected to reduce the volume of sludge for land application. Additionally, the phosphorus content of the sludge may also be affected.

E. PROCESS OPTIMIZATION

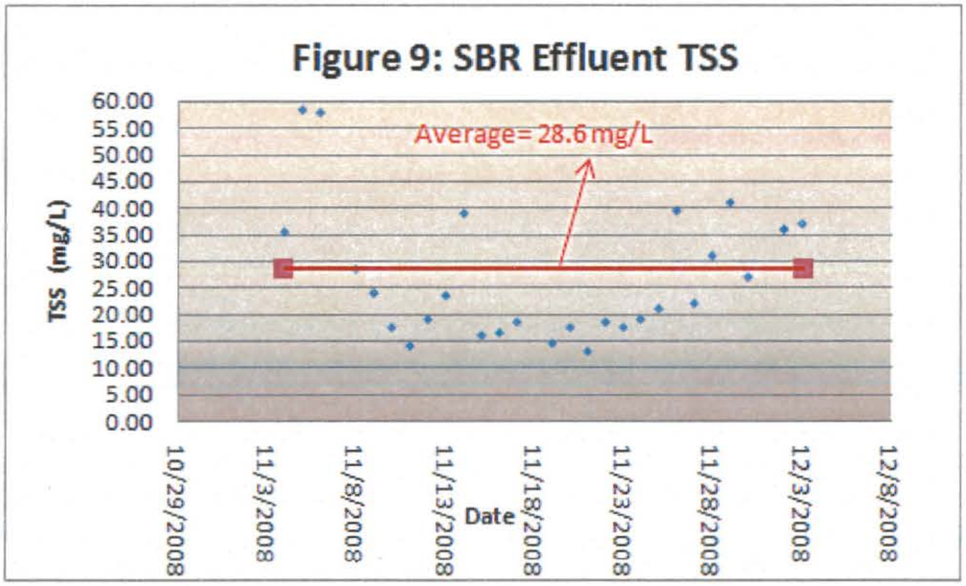
Prior to determining the feasibility of achieving a 0.07 mg/L or 0.05 mg/L total phosphorus discharge limit, it is realized that the biological phosphorus removal process, chemical phosphorus removal process and the Dual DynaSand D2 filtration system should be operated in the optimal conditions . The failure of either component could result in non-compliance with the strict effluent total phosphorus limits. Sorrento-Lactalis, with the assistance of Symbiont, has been systematically analyzing and optimizing the WWTP since November 2008.

EBPR Optimization

Biological Sludge Phosphorus Content (p/TSS%)

The biological sludge phosphorus content (p/TSS%) is normally an important parameter for evaluating EBPR efficiency. A higher percentage of sludge phosphorus content is an indication of better EBPR. Data showed that the sludge phosphorus content (p/TSS %) in the SBR was about 4.2%, which is higher than a conventional sludge of 1.5 – 2.0%. However, the data may not be a valid measure of luxury phosphorus uptake because of ferric addition and precipitation of ferric phosphate in the SBR. Therefore, Symbiont recommended reducing or eliminating the ferric addition to minimize the masking effect of ferric addition on the EBPR evaluation. Additionally, as discussed earlier, ferric addition to the SBRs may be hindering luxury uptake of phosphorus.

The ferric addition has been gradually reduced since early November. Because the ferric might serve as a coagulant in the sludge settling, the effect of ferric reduction on sludge settleability is being closely monitored. The historical total suspended solid (TSS) concentration, which ranges from 14 to 40 mg/L under normal conditions, is shown in Figure 9.



Currently, approximately 0.15 mgd of sludge is wasted from the SBR. Mathematically, if the biological sludge phosphorus content (p/TSS%) is higher than 2.9%, the effluent soluble phosphorus concentration would be close to zero (0.0) mg/L under steady state conditions.

The SBR anaerobic/aerobic time cycle is to be continuously optimized based on results of biological sludge phosphorus content (p/TSS %) after the elimination of ferric effect. Symbiont will recommend revisions to the SBR cycling program to optimize EBPR.

Plug-Flow Simulation

Historically, the SBR was operated in the continuous feed mode. The continuous feed mode results in a low F/M (food to microorganisms ratio) and has been demonstrated not to be optimal for EBPR (study conducted by Dr. J.K. Park in University of Wisconsin – Madison (2001)). Filamentous organisms tend to proliferate in low F/M conditions because they have a greater surface area compared to non-filamentous bacteria and can more rapidly absorb the limited substrate. The filamentous organisms do not exhibit the capacity for luxury uptake of phosphorus. Therefore, Symbiont recommended operating the SBR in a batch feed mode to simulate plug-flow activated sludge . This is expected to inhibit filamentous growth and promote (select) the growth of non-filamentous phosphorus accumulating organisms (PAOs).

To change to the plug-flow mode of operation, a valve position change was made on November 7, 2008 to direct the wastewater flow into the EQ tank, and then batch feed into the SBR. The valve change is illustrated in Figure 11 where CV 110 would be closed all the time and the wastewater is directed into the EQ by opening CV 105.

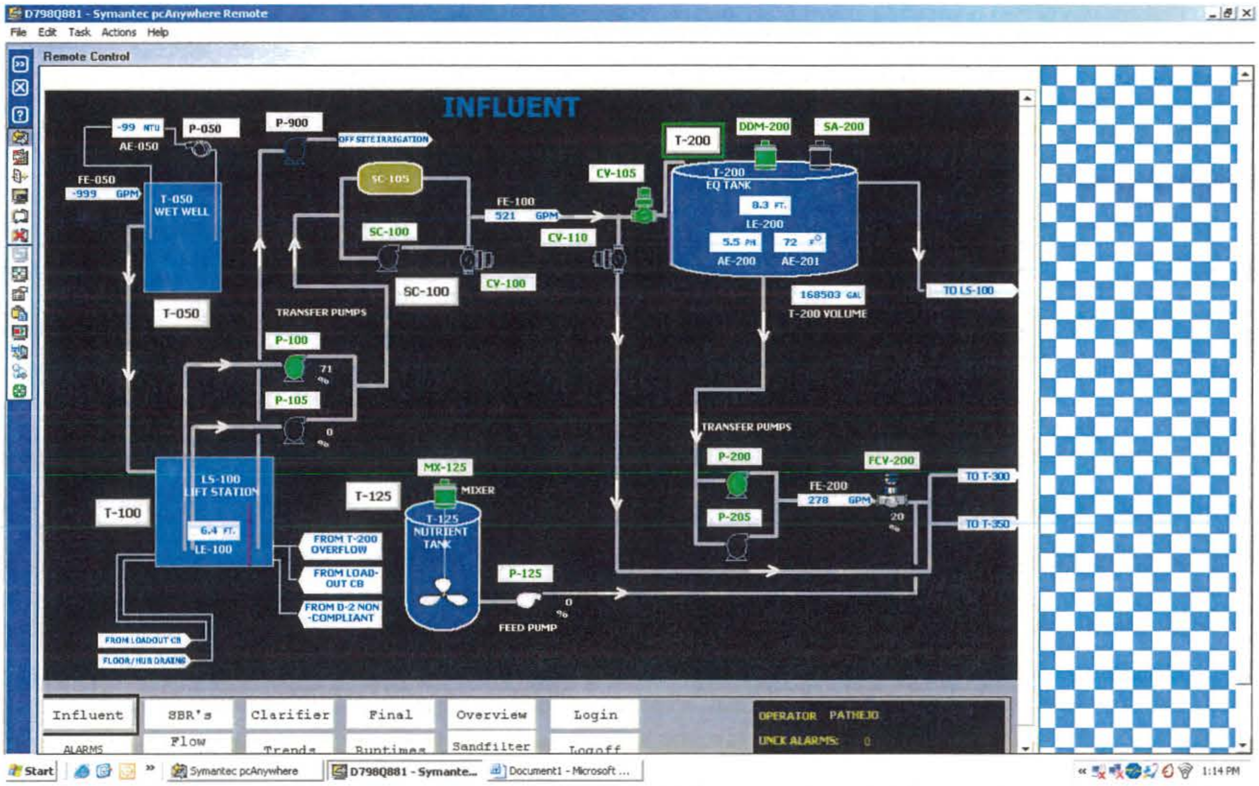
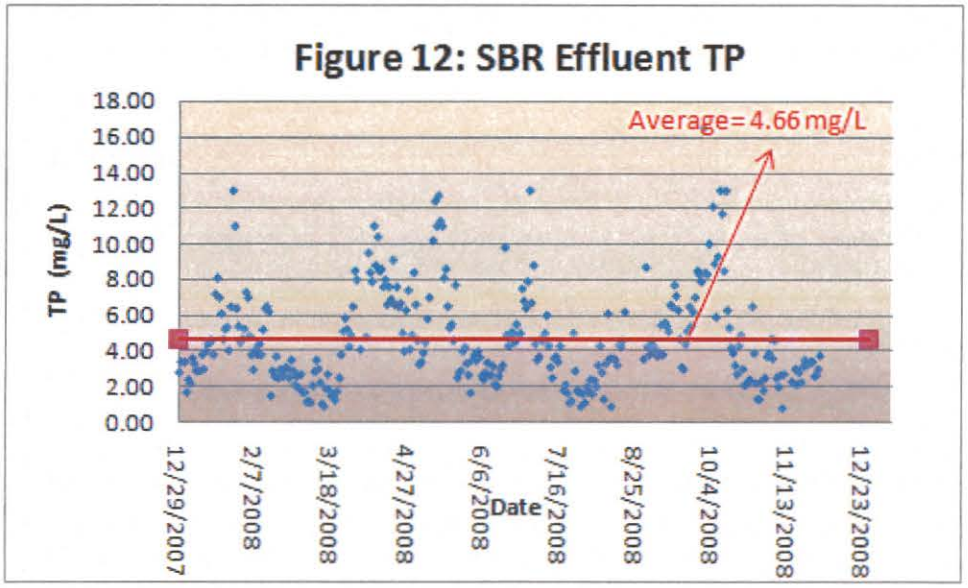


Figure 11: Control Screen to Show Valves Change

The historical phosphorus concentration in the SBR effluent has been in the range of 1.0 mg/L to 13.0 mg/L with an average of 4.7 mg/L (Figure 12). With the valve change implemented in November (plug-flow modification), the growth of filamentous organisms should be reduced which should reduce TSS concentrations in the SBR effluent.



Chemical Phosphorus Removal

Ferric chloride (ferric) is added at two locations in the treatment system for phosphorus removal to the SBRs and ahead of the tertiary clarifier. Sorrento also has the capacity to add ferric chloride to a flocculation tank ahead of the Dual DynaSand filters. However, due to past experience with severe clogging of the filters due to high solids loading, Sorrento-Lactalis is not currently adding any chemicals immediately upstream of the Dual DynaSand filters.

Initially, Sorrento dosed approximately 170 gpd of ferric chloride in the WWTP. In 2008 this was reduced to approximately 120 gpd (Table 3). A 170 gpd of ferric addition would generate 680 lbs/day of inorganic sludge in the treatment system, based on 4 lbs of inorganic sludge produced per gallon of ferric added. As a result, higher reject rate must be applied in order to remove the ferric sludge precipitated in the sand filter. Symbiont therefore, recommend reducing the ferric dosage to a level so that the clarifier effluent phosphorus concentration is in the range of 1.0 to 2.0 mg/L which is the concentration requirement prior to the Dual DynaSand D2 filter system, according to the DynaSand Manufacturer.

Table 3
Ferric Usage

	Ferric Usage		
	SBR (gpd)	Tertiary Clarifier (gpd)	DynaSand (gpd)
Year 2007	70	100	0
Year 2008	50	70	0
December 2008	25	50	0

As of December 8, 2008, the ferric dosage has been reduced to 50 gpd in the tertiary clarifier. No data is yet available to evaluate the effectiveness of this measure.

Because the Dual DynaSand filter is not designed to remove soluble phosphorus, Symbiont recommend chemical addition upstream of the filters to precipitate additional phosphorus.

Symbiont recommended alum or other aluminum based chemicals as the precipitant, instead of ferric, because aluminum based chemicals tend to produce less inorganic sludge and thus are less likely to clog the filter. Furthermore, a lower phosphorus level should be achievable due to the lower solubility products (Ksp) for alum and other aluminum chemicals. Poly-aluminum chloride (PAC) was selected because it reacts more quickly than other alum chemicals.

A series of jar tests were performed in Sorrento-Lactalis. "Supernatant" samples in the jar test were analyzed for total and soluble phosphorus concentrations. The results of PAC jar test is shown in Table 4.

Table 4
Jar Test Results on DynaSand Filter Influent

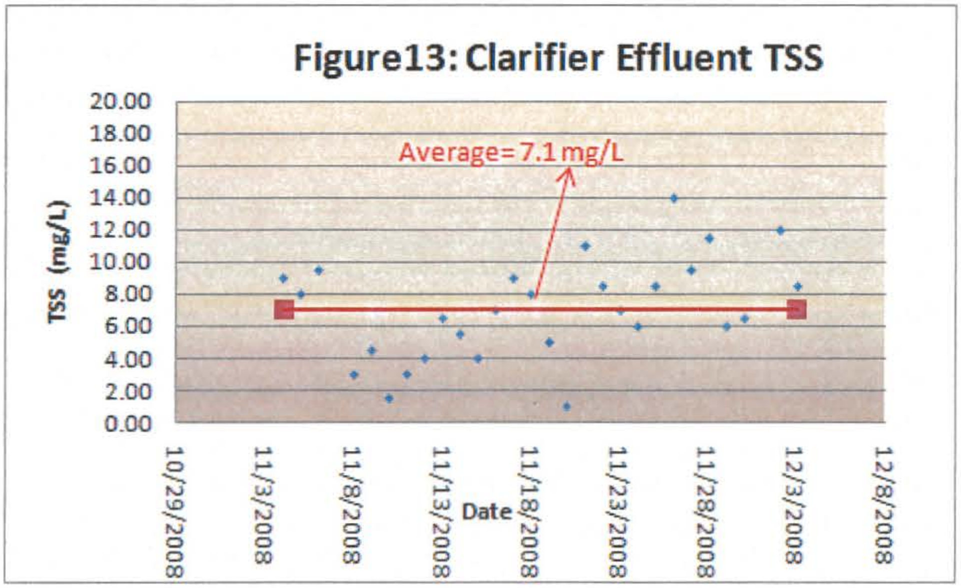
PAC	60 ppm	80 ppm	100 ppm	120 ppm
Total P (mg/L)	0.085	0.125	0.068	0.072
Soluble P (mg/L)	0.011	0.011	0.01	0.011

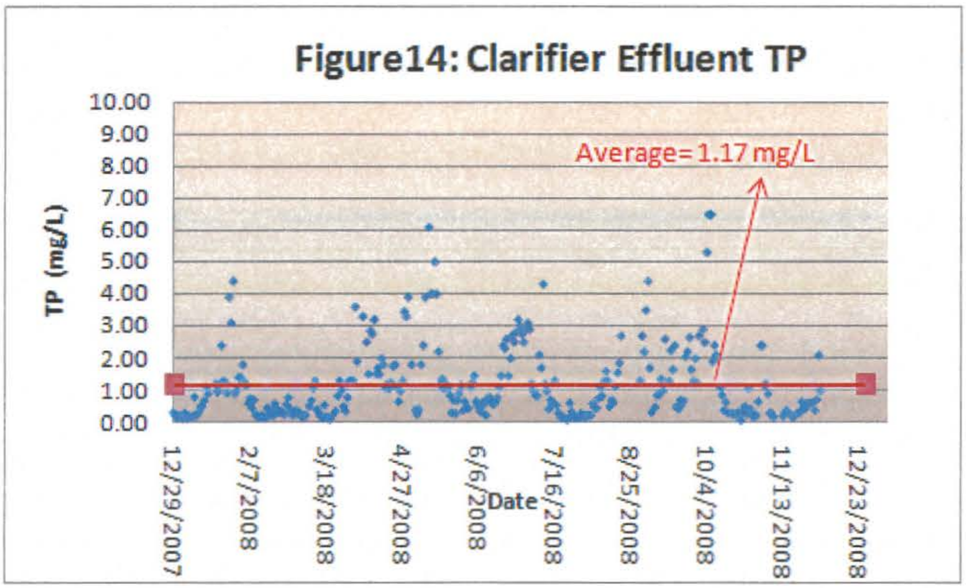
A soluble phosphorus concentrations of 0.011 mg/L was achieved by 60 ppm of PAC addition. However, the total phosphorus concentration tended to exceed 0.07 mg/L over the range of PAC dosages tested. The bench-scale tests likely overestimate the total phosphorus concentrations that could be achieved with PAC addition ahead of the filters because the supernatant samples likely contained particulate phosphorus that would likely be removed by filtration. Symbiont recommends Sorrento-Lactalis install full-scale PAC addition and perform a long term evaluation on the phosphorus removal achieved.

Sorrento-Lactalis is planning to install a PAC addition system by the end of the year.

Dual DynaSand D2 Filtration

The Dual DynaSand D2 filter is a critical component in achieving low effluent total phosphorus concentrations. According to the manufacturer's performance guarantee (Appendix B), in order to achieve a 0.07 mg/L effluent the average TSS into the Dual DynaSand filter should less than 20 mg/L with a peak of 60 mg/L. Additionally, the maximum phosphorus concentration into the Dual DynaSand should be less than 2.0 mg/L. Figure 13 shows the tertiary clarifier effluent TSS has historically been in the range of 1 to 14 mg/L with an average of 7.1 mg/L, while the effluent total phosphorus concentration was in the range of 0.5 to 6.5 mg/L (Figure 14). Therefore, it appears that the soluble phosphorus levels in the filter influent need to be reduced in order for filter effluent to achieve effluent total phosphorus levels of 0.07 mg/L, or less.





The final effluent TSS has been in the 1 mg/L to 15 mg/L range (Figure 8) which is higher and more variable than normally achieved with effluent filtration. It was suspected that the DynaSand reject rate flow was insufficient, resulting in fine solid floc leaking through the sand filter (see Figure 15). However, according to the plant operator, when the total reject rate was increased to about 115 gpm, the reject flow backs up from the Lamella to the secondary filters. Apparently, the differential head between the DynaSand second stage reject weir elevation and the top of the flash mixer before the Lamella was insufficient to deliver the necessary reject flow. Therefore, it was not possible to evaluate whether increasing the reject flow to the filters would reduce effluent TSS levels.

The manufacturer was contacted to identify alternatives for increasing the reject flow rate and improving filter performance. The communication is documented in Appendix C.

Following the manufacture's recommendations, Sorrento-Lactalis wastewater staff air-lanced the sand bed to re-suspend the sand and wash the sand media; disinfected the sand bed with hydrogen peroxide (H_2O_2) to remove possible attached biological grow in the sand bed; and reamed out the Lamella effluent orifice holes to reduce headless thereby allowing an increase in the maximum reject flow rate.

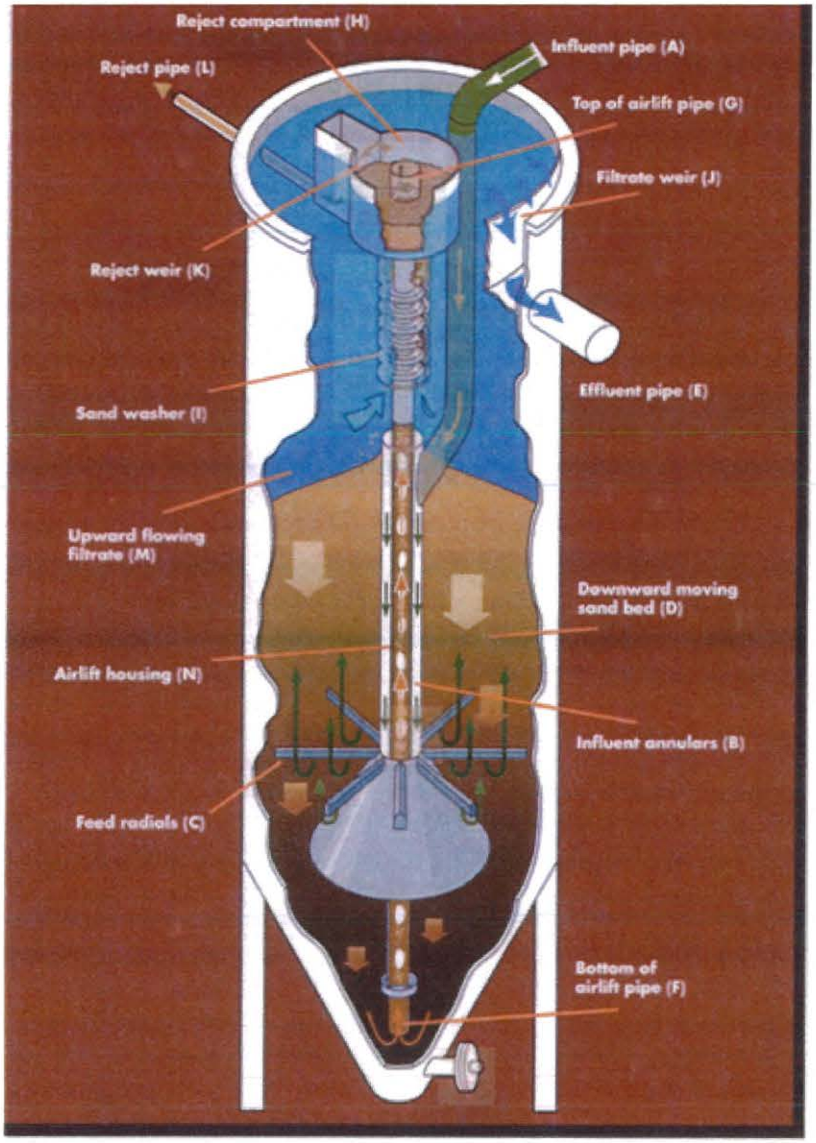
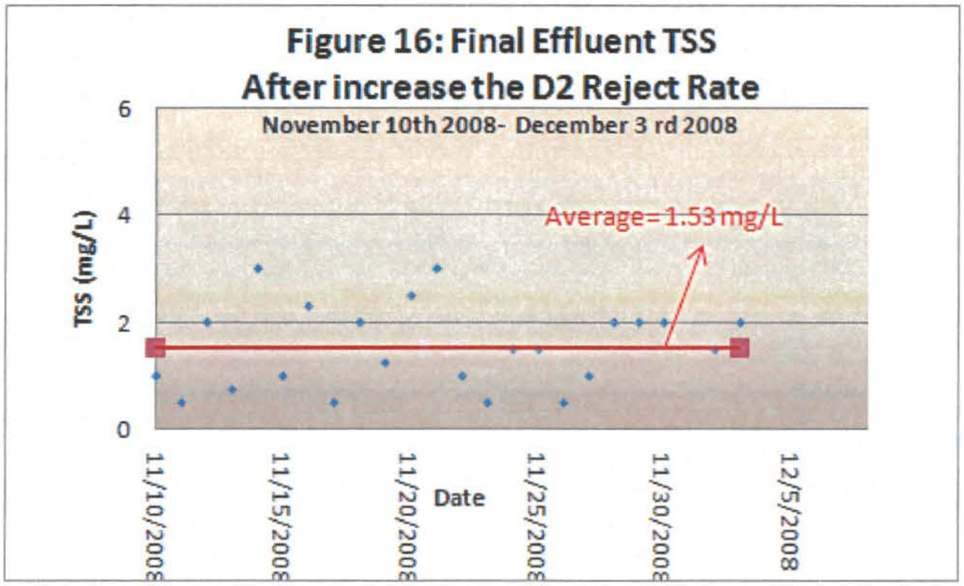


Figure 15: DynaSand Filter from Parkson Corporation

After implementing these recommendations, the plant staff was able to increase the DynaSand reject rate from 85 gpm to 115 gpm. They have been operating the sand filters at this reject rate since November 7, 2008, which has reduced the average final effluent TSS concentration to less than 2 mg/L (Figure 16).



F. UPDATE WASTEWATER TREATMENT PERFORMANCE/ (NOVEMBER-DECEMBER 2008)

The Sorrento-Lactalis WWTP continues to evaluate optimization of the WWTP operations for phosphorus removal. Table 5 lists the most recent operating data for the final effluent. With the measures implemented to date, the effluent total phosphorus concentrations have not consistently been below either the 0.05 mg/L or 0.07 mg/L final limits. However, installation of the PAC addition system ahead of the filters is not complete and a further reduction in effluent total phosphorus is expected.

Table 5
Recent Final Effluent phosphorus Results

Date	10/10/2008	11/20/2008	11/25/2008
Total P (mg/L)	0.07	0.058	0.091
Soluble P (mg/L)	0.06	0.032	0.061

More data is required to evaluate the effectiveness of the optimization steps that have been implemented. The limited data indicates that more than two-thirds of the total phosphorus in the filter effluent is present as soluble phosphorus. Therefore, Symbiont recommends that the plant proceed with installation of the PAC system and evaluate its effectiveness in further reducing effluent total phosphorus concentrations.

G. SUMMARY AND RECOMMENDATIONS

The NPDES permit for Sorrento-Lactalis' Nampa, Idaho plant includes a schedule of compliance (SOC) for meeting monthly average and daily maximum effluent limitations for total phosphorus of 0.70 mg/L and 0.140 mg/L, respectively. Additionally, mass effluent limitations and future plant expansion may require achievement of monthly average effluent limitations of 0.05 mg/L for total phosphorus. The SOC requires Sorrento-Lactalis to perform a phosphorus minimization study and to evaluate and implement methods to optimize the existing wastewater treatment plant for phosphorus removal. This report describes the current status of these efforts.

The phosphorus identification and minimization study identified a phosphate containing cleaning chemical as a major source of influent phosphorus to the wastewater treatment plant. Sorrento-Lactalis is working with its suppliers to identify a non-phosphate cleaning reagent to replace this chemical and expects to have a replacement chemical available in early 2009. Eliminating the use of this chemical is expected to reduce influent phosphorus loading to the wastewater treatment plant by 39 percent. This will reduce chemical demand for phosphorus precipitation in the wastewater treatment plant.

The plant is also evaluating several measures to improve phosphorus removal by the wastewater treatment facility. These measures include:

- Optimization of enhanced biological phosphorus (EBPR) removal in the sequencing batch reactors (SBRs). This includes optimization of the sequencing and chemical addition practices to the SBRs.

- Improved and more efficient use of chemicals to precipitate soluble phosphorus and subsequently remove the precipitated phosphorus in the plants tertiary clarifier and effluent filtration systems.

- Use of alternative chemicals for precipitating phosphorus that can achieve lower soluble phosphorus concentrations and may be more compatible with existing treatment systems.

- Modifications to the effluent filtration system to enhance solids capture.

Several of these measures have been or are in the process of being implemented. Preliminary results have been encouraging but have not demonstrated that the final effluent total phosphorus limitations can be consistently met. However, as mentioned, the source minimization measures (replacement of a phosphate cleaner) and wastewater optimization evaluations and measures are not complete. It is anticipated that a further reduction in effluent phosphorus concentrations will be realized upon implementation of all the proposed changes. Therefore, Symbiont's recommendation is to complete the studies and measures identified above and continue to monitor system performance. Once the measures are fully implemented and monitored for a reasonable period of time, the capacity of the existing wastewater treatment system to meet the final effluent limitations and accommodate a possible plant expansion can be fully assessed.

H. FUTURE CHALLENGES

The total effluent limitations in Sorrento-Lactalis' NPDES permit are extremely low, and regardless of the improvements made to the existing facility are likely to be a challenge to meet. Below we have summarized those challenges.

Consistency

The Sorrento-Lactalis wastewater treatment plant utilizes three technologies (EBPR, chemical precipitation and clarification, and effluent filtration (Dual DynaSand D2 Filter) to achieve strict effluent phosphorus limit. Fluctuations in the wastewater flow and loads and variation in influent characteristics are typical in this type of dairy facility. Changes in wastewater flows and loads or characteristics can cause instability in the EBPR process, resulting in phosphorus release. The chemical phosphorus removal processes can be utilized to remove the excess soluble phosphorus. However, the excess inorganic sludge (floc) resulting from the chemical addition could potentially cause operational problems in the Dual DynaSand D2 filtration system. Therefore, extensive monitoring is required to adjust the EBPR process to counter the environmental variables which affect the EBPR process performance. While the 0.07 mg/L phosphorus limit may be achievable at Sorrento-Lactalis, the ability to consistently achieve the final phosphorus effluent limits needs to be demonstrated over time.

Limit of Technology

There is a very limited body of information to ascertain how low a level of phosphorus can be practicably attained with available technologies. It is known that polyphosphates accounted for in the dissolved acid-hydrolysable fraction are difficult to remove either biologically or chemically. These factors prevented the advanced technologies, including the Dual DynaSand D2 technology, recently piloted at the Coeur D'Alene wastewater treatment from achieving a target of less than 0.01 mg/L total effluent phosphorus concentration (Lancaster and Madden, WEFTEC 2008). The recalcitrant phosphorus fraction has not been identified in the Sorrento-Lactalis wastewater.

Analytical Accuracy

DR/4000 spectrophotometer from Hach Company is used by Sorrento-Lactalis to monitor the phosphorus concentration (Hach Method 8190). According to the Hach manual, the estimated detention limit is 0.06 mg/L PO_4^{-3} (equivalent to 0.02 mg/L as P). With such a low analytical limit, the spectrophotometer should be routinely calibrated by instrument professional and a QA/QC procedure should be in placed to ensure the data's accuracy.

An in-line phosphorus analyzer which is to be installed to control the chemical (PAC) pump rate poses reliability concerns. A failure of this analyzer would cause an overdose or under dose of alum (PAC), possibly resulting in effluent non-compliance.

The certified lab (Analytical Laboratories, Inc) uses EPA Method 365.4 with the method detention limit (MDL) of 0.05 mg/L as P. Within the reported 99% confidence coefficient, data should be trusted. However, any error including sampling procedure, would affect the phosphorus results significantly. Sorrento-Lactalis has requested the certified lab to use the EPA Method 365.1 for the phosphorus analysis with a MDL of 0.005 mg/L as P.

Both the on-site monitoring and certified lab require skill professionals to provide accurate results for process adjustment or compliance reporting purpose.

A

APPENDIX A

NPDES PERMIT

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Authorization to Discharge under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 *et seq.*, as amended by the Water Quality Act of 1987, P.L. 100-4, the "Act",

Sorrento Lactalis, Inc.
P.O. Box 1280
4912 Franklin Road
Nampa, ID 83653

is authorized to discharge from a cheese processing facility located in Nampa, Idaho, at the following location:

Outfall	Receiving Water	Latitude	Longitude
001	Purdam Drain	43° 36' 45" N	116° 29' 35" W

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective November 1, 2005.

This permit and the authorization to discharge shall expire at midnight, October 31, 2010.

The permittee must reapply for a permit reissuance on or before April 30, 2010, 180 days before the expiration of this permit, if the permittee intends to continue operations and discharges at the facility beyond the term of this permit.

Signed this 14th day of September 2005.

for Robert R. Reichgott

Michael F. Gearheard, Director
Office of Water and Watersheds

PCS 9/26/05

Schedule of Submissions

The following is a summary of some of the items the permittee must complete and/or submit to EPA Region 10 during the term of this permit:

Item	Due Date
1. Discharge Monitoring Reports (DMR)	DMRs are due monthly and must be postmarked by the 10th day of the month following the monitoring month (see Part III.B.).
2. Quality Assurance Plan (QAP)	The permittee must provide EPA Region 10 and IDEQ with written notification that the Plan has been developed and implemented by January 31, 2006 (see II.A.). The Plan must be kept on site and made available to EPA Region 10 and IDEQ upon request.
3. Best Management Practices (BMP) Plan	The permittee must provide EPA Region 10 and IDEQ with written notification that the Plan has been developed and implemented by January 31, 2006 (see II.C.). The Plan must be kept on site and made available to EPA Region 10 and IDEQ upon request.
4. NPDES Renewal Application	The application must be submitted by April 30, 2010 (see V.B.).
5. Surface Water Monitoring Report	The Report must be submitted with the NPDES renewal application (by April 30, 2010).
6. Compliance Schedule	Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date (see III.J.)

I. Limitations and Monitoring Requirements

A. Discharge Authorization

During the effective period of this permit, the permittee is authorized to discharge pollutants from outfall 001 to Purdam Drain, within the limits and subject to the conditions set forth herein. This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in the permit application process.

B. Effluent Limitations and Monitoring

1. The permittee must limit and monitor discharges from outfall 001 as specified in Table 1, on the following page. All figures represent maximum effluent limits unless otherwise indicated. The permittee must comply with the effluent limits in the table at all times unless otherwise indicated, regardless of the frequency of monitoring or reporting required by other provisions of this permit.
2. Minimum Levels. For all effluent monitoring, the permittee must use methods that can achieve a minimum level (ML) less than the effluent limitation, to the extent practicable. For parameters that do not have effluent limitations, the permittee must use methods that can achieve MLs less than or equal to those specified in Table 2.
3. The permittee must not discharge any waste streams, including spills and other unintentional or non-routine discharges of pollutants, that are not part of the normal operation of the facility as disclosed in the permit application, or any pollutants that are not ordinarily present in such waste streams.
4. The permittee must not discharge hazardous materials in concentrations found to be of public health significance or to impair beneficial uses of the receiving water.
5. The permittee must not discharge chemicals or toxic pollutants in concentrations that impair beneficial uses of the receiving water.
6. The permittee must not discharge deleterious materials in concentrations that impair beneficial uses of the receiving water.
7. The permittee must not discharge floating, suspended or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair beneficial uses of the receiving water.
8. The permittee must not discharge excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing beneficial uses of the receiving water.
9. For all pollutants subject to effluent monitoring requirements but not effluent limits, the permittee must report the average monthly and maximum daily effluent values on the monthly discharge monitoring reports (See Part III.B.).

Table 1: Effluent Limitations and Monitoring Requirements						
Parameter	Units	Effluent Limitations			Monitoring Requirements	
		Average Monthly	Maximum Daily	Instantaneous Maximum	Sample Frequency	Sample Type
Outfall Flow	mgd	–	–	–	continuous	recording
Biochemical Oxygen Demand (BOD_5)	mg/L	10[1]	20[1]	–	weekly	24-hour composite
	lbs/day	42	84	–		
Total Suspended Solids (TSS)	mg/L	13[1]	25[1]	–	weekly	24-hour composite
	lbs/day	53	106	–		
E. Coli Bacteria[4]	#/100ml	126[2]	–	406	5x/month	grab
pH	s.u.	6.0 to 9.0 at all times			daily	grab
Total Ammonia as N	mg/L	–	–	–	monthly	24-hour composite
	lbs/day	–	–	–		
Total Phosphorus as P (Interim)[3]	mg/L	0.48[1]	0.96[1]	–	monthly	24-hour composite
	lbs/day	2.00	4.02	–		
Total Phosphorus as P (Final)[3]	mg/L	0.070	0.140	–	monthly	24-hour composite
	lbs/day	0.29[1]	0.58[1]	–		
Floating, Suspended or Submerged Matter	Narrative Limitation (see I.B.7.)				monthly	visual
Oil and Grease	No Visible Sheen				monthly	visual
Nitrate + Nitrite as N	mg/L	–	–	–	monthly	24-hour composite
Nitrite as N	mg/L	–	–	–	monthly	24-hour composite
Total Kjeldahl Nitrogen	mg/L	–	–	–	quarterly[5]	24-hour composite
Orthophosphate as P	mg/L	–	–	–	quarterly[5]	24-hour composite
Temperature	°C	–	–	–	weekly	grab

Footnotes:

1. Effluent limits based on an average flow of 0.5 mgd (500,000 gallons per day).
2. The permittee must report the monthly geometric mean E. Coli concentration.
3. Please see part II.B. of this permit for the total phosphorus schedule of compliance.
4. Reporting is required within 24 hours of a maximum daily limit violation. See Part III.G. of this permit.
5. Quarters are defined as January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31. Results must be reported on the DMR for the last month of the quarter (i.e. the March, June, September and December DMRs).

C. Surface Water Monitoring

The permittee must perform the following receiving water monitoring program to monitor changes that may occur as a result of activities associated with the discharges from the facility.

1. The permittee must establish monitoring stations in accordance with Table 2. The monitoring stations must be approved be IDEQ.
2. The permittee must begin monitoring the receiving water by January 31, 2006 and continue for four (4) years.
3. The permittee must sample the receiving water on the same day as effluent sampling, to the extent practicable.

4. The permittee must analyze all samples for the parameters listed in Table 2 to achieve minimum levels (MLs) that are equivalent to or less than those listed in Table 2. The permittee may request different MLs. Such a request must be in writing and must be approved by EPA Region 10. Once approved, these MLs supersede the maximum MLs in Table 2.

Table 2: Surface Water Monitoring Requirements

Parameter (units)	Sample Locations	Sample Frequency	Sample Type	Maximum ML
Flow (mgd)	Upstream of outfall, mouth of Purdam Drain into Mason Creek	monthly	measure	---
Nitrite (mg/L)	Upstream of outfall	quarterly[1]	grab	0.01
Nitrate + Nitrite (mg/L)	Upstream of outfall	quarterly[1]	grab	0.1
Total Kjeldahl Nitrogen (mg/L)	Upstream of outfall	quarterly[1]	grab	0.1
Total Ammonia as N (mg/L)	Upstream of outfall, mouth of Purdam Drain into Mason Creek	quarterly[1]	grab	0.05
Total Phosphorous as P (mg/L)	Upstream of outfall, mouth of Purdam Drain into Mason Creek	quarterly[1]	grab	0.01
Orthophosphate as P (mg/L)	Upstream of outfall, mouth of Purdam Drain into Mason Creek	quarterly[1]	grab	0.01
pH (s. u.)	Upstream of outfall, mouth of Purdam Drain into Mason Creek	quarterly[1]	grab	---
Temperature (°C)	Upstream of outfall, mouth of Purdam Drain into Mason Creek	quarterly[1]	grab	---

1. Quarters are defined as January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31.

5. Quality assurance/quality control plans for all monitoring must be documented in the Quality Assurance Plan required under Part II.A., "Quality Assurance Plan".

6. The permittee must submit surface water monitoring results to EPA Region 10 and IDEQ with the next NPDES permit application, which is due by April 30, 2010 (see Part V.B). At a minimum, the report must include the following:

   a) Dates of sample collection and analyses.

   b) Results of sample analysis for all samples.

   c) Relevant quality assurance/quality control (QA/QC) information.

II. Special Conditions

A. Quality Assurance Plan (QAP)

The permittee must develop a quality assurance plan (QAP) for all monitoring required by this permit. The permittee must provide EPA Region 10 and IDEQ with written notification that the Plan has been developed and implemented by January 31, 2006. Any existing QAPs may be modified for submittal under this section.

1. The QAP must be designed to assist in planning for the collection and analysis of effluent and receiving water samples in support of the permit and in explaining data anomalies when they occur.

2. Throughout all sample collection and analysis activities, the permittee must use the EPA-approved QA/QC and chain-of-custody procedures described in *Requirements for Quality Assurance Project Plans* (EPA/QA/R-5) and *Guidance for Quality Assurance Project Plans* (EPA/QA/G-5). The QAP must be prepared in the format that is specified in these documents.

3. At a minimum, the QAP must include the following:

   a) Details on the number of samples, type of sample containers, preservation of samples, holding times, analytical methods, analytical detection and quantitation limits for each target compound, type and number of quality assurance field samples, precision and accuracy requirements, sample preparation requirements, sample shipping methods, and laboratory data delivery requirements.

   b) Map(s) indicating the location of each sampling point.

   c) Qualification and training of personnel.

   d) Name(s), address(es) and telephone number(s) of the laboratories, used by or proposed to be used by the permittee.

4. The permittee must amend the QAP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAP.

5. Copies of the QAP must be kept on site and made available to EPA and/or IDEQ upon request.

B. Total Phosphorus Schedule of Compliance

1. The permittee must achieve compliance with the final total phosphorus effluent limitations of Part I.B. (Table 1), by May 1, 2010.

2. Until compliance with the effluent limits is achieved, at a minimum, the permittee must complete the tasks and reports listed in Table 3.

3. The permittee must submit an Annual Report of Progress, which outlines the progress made towards reaching the compliance date for the total phosphorus effluent limitations. The annual Report of Progress must be submitted by November 1 of each year. The first report is due November 1, 2006 and annually thereafter, until compliance with the total phosphorus effluent limits is achieved. See also Part III.J., "Compliance Schedules". At a minimum, the annual report must include:

   a) An assessment of the previous year of total phosphorus data and comparison to the effluent limitations.

   b) A report on progress made towards meeting the final effluent limitations, including the applicable deliverable required under paragraph 2 (Table 3).

c) Further actions and milestones targeted for the upcoming year.

Table 3: Tasks Required Under the Schedule of Compliance for Total Phosphorus

Task No.	Due at End of Year	Task Activity
1	1	**Source investigation:** The permittee must investigate the sources, extent, transport, and fate of phosphorus in outfall 001. **Deliverable:** The permittee must prepare a report of findings and recommendations for further actions to reduce effluent phosphorus concentrations.
2	1	**Receiving water fate and transport study:** The permittee must complete a study to determine what fraction of the phosphorus discharged from outfall 001 reaches the mouth of Purdam Drain. **Deliverable:** The permittee must prepare a report of findings.
3	2	**Feasibility study:** The permittee must investigate the feasibility of measures to reduce phosphorus concentrations in outfall 001 to meet the final effluent limits. Evaluations should consider short and long term aspects of: 1) effectiveness of the measures (e.g., reduction of phosphorus, affords long-term protection, minimizes short term environmental impacts, and complies with effluent limits); 2) implementability of the measures (e.g., technical feasibility); and 3) costs. Readily implementable measures must be designed and constructed as soon as feasible. Measures that are more technically difficult or have more unknowns may need further investigations. **Deliverable:** The permittee must submit: 1) A report of the findings on the feasibility of measures; and 2) Design documents and/or construction completion reports for those measures that are readily implemented.
4[1]	3	**Design and construction:** The permittee must construct measures to reduce phosphorus concentrations in outfall 001 to achieve the effluent limits. **Deliverable:** The permittee must submit construction completion reports, and/or progress reports if more technically difficult or unknown conditions prevent completion.
5[1]	4	Continued design and construction. **Deliverable:** The permittee must submit construction completion reports, and/or progress reports if more technically difficult or unknown conditions prevent completion.
6[1]	4 1/2	Construction completed and operating such that effluent limits are achieved.

Footnotes:
1. Tasks scheduled past Year 2 are listed in anticipation of potential unknown conditions. The permittee is not required to complete these later tasks if compliance with the effluent limits is achieved sooner.

C. Best Management Practices Plan

1. Purpose:

Through implementation of the best management practices (BMP) plan, the permittee must prevent or minimize the generation and the potential for the release of pollutants from the facility to the waters of the United States through normal and ancillary activities.

2. Development and Implementation Schedule:

The permittee must provide EPA Region 10 and IDEQ with written notification that the BMP plan has been developed and implemented by January 31, 2006. Any existing BMP plans may be modified for submittal and approval under this section. The permittee must implement the provisions of the plan as conditions of this permit by January 31, 2006.

3. Documentation

The permittee must maintain a copy of the BMP Plan at the facility and make it available to EPA, IDEQ or an authorized representative upon request.

4. Elements of the BMP Plan

a) The BMP Plan must be consistent with the objectives above and the general guidance contained *in Guidance Manual for Developing Best Management Practices* (EPA 833-B-93-004, October 1993) and *Storm Water Management For Industrial Activities, Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-006) or any subsequent revision to these guidance documents.

b) Specific Best Management Practices. The BMP Plan must establish specific BMPs or other measures to achieve the purpose of the BMP Plan under subpart A, and which ensure that the following specific requirements are met:

(i) Solids, sludges, or other pollutants removed in the course of treatment or control of water and wastewaters must be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

(ii) Ensure proper management of solid and hazardous waste in accordance with regulations promulgated under the Resource Conservation and Recovery Act (RCRA). Management practices required under RCRA regulations must be referenced in the BMP Plan.

5. BMP Plan Modification

a) The permittee must amend the BMP Plan whenever there is a change in the facility or in the operation of the facility which materially increases the generation of pollutants or their release or potential release to surface waters.

b) The permittee must amend the BMP Plan whenever it is found to be ineffective in achieving the general objective of preventing and minimizing the generation and the potential for the release of pollutants from the facility to the waters of the United States and/or the specific requirements above.

c) Any changes to the BMP Plan must be consistent with the objectives and specific requirements listed above.

III. General Monitoring, Recording and Reporting Requirements

A. Representative Sampling (Routine and Non-Routine Discharges)

Samples and measurements must be representative of the volume and nature of the monitored discharge.

In order to ensure that the effluent limits set forth in this permit are not violated at times other than when routine samples are taken, the permittee must collect additional samples at the appropriate outfall whenever any discharge occurs that may reasonably be expected to cause or contribute to a violation that is unlikely to be detected by a routine sample. The permittee must analyze the additional samples for those parameters limited in Part I.B. of this permit that are likely to be affected by the discharge.

The permittee must collect such additional samples as soon as the spill, discharge, or bypassed effluent reaches the outfall. The samples must be analyzed in accordance with paragraph III.C ("Monitoring Procedures"). The permittee must report all additional monitoring in accordance with paragraph III.D ("Additional Monitoring by Permittee").

B. Reporting of Monitoring Results

The permittee must summarize monitoring results each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1) or equivalent. The permittee must submit reports monthly, postmarked by the 10th day of the following month. The permittee must sign and certify all DMRs, and all other reports, in accordance with the requirements of Part V.E. of this permit ("Signatory Requirements"). The permittee must submit the legible originals of these documents to the Director, Office of Compliance and Enforcement, with copies to IDEQ at the following addresses:

US EPA Region 10
Attn: PCS Data Entry Team
1200 Sixth Avenue, OCE-133
Seattle, Washington 98101

Idaho Department of Environmental Quality
Boise Regional Office
1445 N. Orchard Street
Boise, ID 83706

C. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR 136, unless other test procedures have been specified in this permit or approved by EPA as an alternate test procedure under 40 CFR 136.5.

D. Additional Monitoring by Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the permittee must include the results of this monitoring in the calculation and reporting of the data submitted in the DMR.

Upon request by EPA, the permittee must submit results of any other sampling, regardless of the test method used.

E. Records Contents

Records of monitoring information must include:

1. the date, exact place, and time of sampling or measurements;
2. the name(s) of the individual(s) who performed the sampling or measurements;
3. the date(s) analyses were performed;
4. the names of the individual(s) who performed the analyses;
5. the analytical techniques or methods used; and
6. the results of such analyses.

F. Retention of Records

The permittee must retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, copies of DMRs, a copy of the NPDES permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of EPA or IDEQ at any time.

G. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee must report the following occurrences of noncompliance by telephone within 24 hours from the time the permittee becomes aware of the circumstances:

a) any noncompliance that may endanger health or the environment;

b) any unanticipated bypass that exceeds any effluent limitation in the permit (See Part IV.F., "Bypass of Treatment Facilities");

c) any upset that exceeds any effluent limitation in the permit (See Part IV.G., "Upset Conditions"); or

d) any violation of a maximum daily discharge limitation for any of the pollutants in Table 1 of Part I.A.

2. The permittee must also provide a written submission within five days of the time that the permittee becomes aware of any event required to be reported under subpart 1 above. The written submission must contain:

   a) a description of the noncompliance and its cause;

   b) the period of noncompliance, including exact dates and times;

   c) the estimated time noncompliance is expected to continue if it has not been corrected; and

   d) steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

3. The Director of the Office of Compliance and Enforcement may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the NPDES Compliance Hotline in Seattle, Washington, by telephone, (206) 553-1846.

4. Reports must be submitted to the addresses in Part III.B ("Reporting of Monitoring Results").

H. Other Noncompliance Reporting

The permittee must report all instances of noncompliance, not required to be reported within 24 hours, at the time that monitoring reports for Part III.B ("Reporting of Monitoring Results") are submitted. The reports must contain the information listed in Part III.G.2 of this permit ("Twenty-four Hour Notice of Noncompliance Reporting").

I. Changes in Discharge of Toxic Pollutants

The permittee must notify the Director of the Office of Water and Watersheds and IDEQ as soon as it knows, or has reason to believe:

1. That any activity has occurred or will occur that would result in the discharge, on a **routine or frequent** basis, of any toxic pollutant that is not limited in the permit, if that discharge may reasonably be expected to exceed the highest of the following "notification levels":

   a) One hundred micrograms per liter (100 ug/l);

   b) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for

2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

c) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

d) The level established by EPA in accordance with 40 CFR 122.44(f).

2. That any activity has occurred or will occur that would result in any discharge, on a **non-routine or infrequent** basis, of any toxic pollutant that is not limited in the permit, if that discharge may reasonably be expected to exceed the highest of the following "notification levels":

   a) Five hundred micrograms per liter (500 ug/l);

   b) One milligram per liter (1 mg/l) for antimony;

   c) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

   d) The level established by EPA in accordance with 40 CFR 122.44(f).

3. The permittee must submit the notification to Office of Water and Watersheds at the following address:

   US EPA Region 10
   Attn: NPDES Permits Unit Manager
   1200 Sixth Avenue, OWW-130
   Seattle, Washington 98101

J. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date.

IV. Compliance Responsibilities

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application.

B. Penalties for Violations of Permit Conditions

1. Civil and Administrative Penalties. Pursuant to 40 CFR Part 19 and the Act, any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment

program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701 note) (currently $32,500 per day for each violation).

2. Administrative Penalties. Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Pursuant to 40 CFR 19 and the Act, administrative penalties for Class I violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701 note) (currently $11,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $32,500). Pursuant to 40 CFR 19 and the Act, penalties for Class II violations are not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act and the Federal Civil Penalties Inflation Adjustment Act (28 U.S.C. § 2461 note) as amended by the Debt Collection Improvement Act (31 U.S.C. § 3701 note) (currently $11,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $157,500).

3. Criminal Penalties:

   a) Negligent Violations. The Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

   b) Knowing Violations. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

   c) Knowing Endangerment. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

d) False Statements. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

C. Need To Halt or Reduce Activity not a Defense

It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this permit.

D. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this Part.

2. Notice.

   a) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it must submit prior notice, if possible at least 10 days before the date of the bypass.

   b) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required under Part III.G ("Twenty-four Hour Notice of Noncompliance Reporting").

3. Prohibition of bypass.

   a) Bypass is prohibited, and the Director of the Office of Compliance and Enforcement may take enforcement action against the permittee for a bypass, unless:

      (i) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

      (ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

      (iii)The permittee submitted notices as required under paragraph 2 of this Part.

   b) The Director of the Office of Compliance and Enforcement may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 3.a. of this Part.

G. Upset Conditions

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the permittee meets the requirements of paragraph 2 of this Part. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

2. Conditions necessary for a demonstration of upset. To establish the affirmative defense of upset, the permittee must demonstrate, through

properly signed, contemporaneous operating logs, or other relevant evidence that:

a) An upset occurred and that the permittee can identify the cause(s) of the upset;

b) The permitted facility was at the time being properly operated;

c) The permittee submitted notice of the upset as required under Part III.G, "Twenty-four Hour Notice of Noncompliance Reporting;" and

d) The permittee complied with any remedial measures required under Part IV.D, "Duty to Mitigate."

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

H. Toxic Pollutants

The permittee must comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

I. Planned Changes

The permittee must give notice to the Director of the Office of Water and Watersheds as specified in part III.I.3. and IDEQ as soon as possible of any planned physical alterations or additions to the permitted facility whenever:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements under Part III.I ("Changes in Discharge of Toxic Substances").

J. Anticipated Noncompliance

The permittee must give advance notice to the Director of the Office of Compliance and Enforcement and IDEQ of any planned changes in the permitted facility or activity that may result in noncompliance with this permit.

V. General Provisions

A. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR 122.62, 122.64, or 124.5. The filing of a request by the permittee for a permit modification, revocation and reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

B. Duty to Reapply

If the permittee intends to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. In accordance with 40 CFR 122.21(d), and unless permission for the application to be submitted at a later date has been granted by the Regional Administrator, the permittee must submit a new application at least 180 days before the expiration date of this permit.

C. Duty to Provide Information

The permittee must furnish to EPA and IDEQ, within the time specified in the request, any information that EPA or IDEQ may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee must also furnish to EPA or IDEQ, upon request, copies of records required to be kept by this permit.

D. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or that it submitted incorrect information in a permit application or any report to EPA or IDEQ, it must promptly submit the omitted facts or corrected information.

E. Signatory Requirements

All applications, reports or information submitted to EPA and IDEQ must be signed and certified as follows.

1. All permit applications must be signed as follows:
   a) For a corporation: by a responsible corporate officer.
   b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
   c) For a municipality, state, federal, Indian tribe, or other public agency: by either a principal executive officer or ranking elected official.
2. All reports required by the permit and other information requested by EPA or IDEQ must be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
   a) The authorization is made in writing by a person described above;
   b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company; and

c) The written authorization is submitted to the Director of the Office of Compliance and Enforcement and IDEQ.

3. Changes to authorization. If an authorization under Part V.E.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part V.E.2. must be submitted to the Director of the Office of Compliance and Enforcement and IDEQ prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this Part must make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

F. Availability of Reports

In accordance with 40 CFR 2, information submitted to EPA pursuant to this permit may be claimed as confidential by the permittee. In accordance with the Act, permit applications, permits and effluent data are not considered confidential. Any confidentiality claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice to the permittee. If a claim is asserted, the information will be treated in accordance with the procedures in 40 CFR 2, Subpart B (Public Information) and 41 Fed. Reg. 36902 through 36924 (September 1, 1976), as amended.

G. Inspection and Entry

The permittee must allow the Director of the Office of Compliance and Enforcement, EPA Region 10; IDEQ; or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

H. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, nor any infringement of federal, tribal, state or local laws or regulations.

I. Transfers

This permit is not transferable to any person except after notice to the Director of the Office of Water and Watersheds as specified in part III.I.3. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Act. (See 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory).

J. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

K. Reopener

This permit may be reopened in order to incorporate any wasteload allocation granted to the facility in an approved TMDL.

VI. Definitions

1. "Act" means the Clean Water Act.
2. "Administrator" means the Administrator of the EPA, or an authorized representative.
3. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

4. "Best Management Practices" (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of wasters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.
5. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
6. "Composite" - see "24-hour composite".
7. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.
8. "Director of the Office of Compliance and Enforcement" means the Director of the Office of Compliance and Enforcement, EPA Region 10, or an authorized representative.
9. "Director of the Office of Water and Watersheds" means the Director of the Office of Water and Watersheds, EPA Region 10, or an authorized representative.
10. "DMR" means discharge monitoring report.
11. "EPA" means the United States Environmental Protection Agency.
12. "Grab" sample is an individual sample collected over a period of time not exceeding 15 minutes.
13. "IDEQ" means the Idaho Department of Environmental Quality.
14. "Maximum daily discharge limitation" means the highest allowable "daily discharge."
15. "Method Detection Limit (MDL)" means the minimum concentration of a substance (analyte) that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte.
16. "Minimum Level (ML)" means the concentration at which the entire analytical system must give a recognizable signal and an acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specified sample weights, volumes and processing steps have been followed.
17. "NPDES" means National Pollutant Discharge Elimination System, the national program for issuing, modifying, revoking and reissuing, terminating,

monitoring and enforcing permits . . . under sections 307, 402, 318, and 405 of the CWA.

18. "QA/QC" means quality assurance/quality control.
19. "Regional Administrator" means the Regional Administrator of Region 10 of the EPA, or the authorized representative of the Regional Administrator.
20. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
21. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
22. "24-hour composite" sample means a combination of at least 8 discrete sample aliquots of at least 100 milliliters, collected over periodic intervals from the same location, during the operating hours of a facility over a 24 hour period. The composite must be flow proportional. The sample aliquots must be collected and stored in accordance in accordance with procedures prescribed in the most recent edition of *Standard Methods for the Examination of Water and Wastewater* and the permittee's Quality Assurance Plan (see Part II.A. of this permit).

B

APPENDIX B

DUAL DYNASAND PERFORMANCE GUARANTEE

PARKSON CORPORATION

PERFORMANCE GUARANTEE
DYNASAND D2® SYSTEM
For SORRENTO LACTILIS, INC, NAMPA, IDAHO WWTF
September 2, 2004

Parkson Corporation (hereinafter, "Parkson") hereby provides a Performance Guarantee on the performance of its DynaSand D2 System (hereinafter, "D2") for the project entitled Sorrento Lactalis, Inc., Nampa, Idaho Production Facility Wastewater Treatment Facility (hereinafter, "Project") when installed and operated in accordance with Parkson's recommended design and operating specifications, according to the following provisions:

Guarantee Period. Parkson guarantees the performance of the Equipment for one (1) year from plant start-up.

Performance Guarantee. The proposed Equipment should, when operated under standard conditions published by Parkson (Operation & Maintenance Manual and any amendment thereto ("O&M")), when based on the **Maximum Influent Values** noted below, and produce an effluent of the following quality (daily average values):

Maximum Influent Values: 774,720 gpd

Peak Design Flow	=	538 gpm (plus recycled filter reject up to 96 gpm) – avg 3-400gp 101 gpm (recycle
Peak Influent TSS	=	< 60 mg/L > met
Maximum Average TSS	=	< 20 mg/L
Maximum Precipitable Phosphorus	=	< 2.0 mg/L – met

Effluent Performance Quality:

Maximum Precipitable Phosphorus	=	0.07 mg/L

Performance Policy Contingencies

* All requirements of this guarantee are based on properly pretreated feed to insure that the phosphorus is precipitable (including pH and alkalinity adjustments by others, if required), as well as proper installation, operation and addition of chemicals as required (by others). Please note that this Performance Guarantee Policy is only offered based on Parkson's experience in the industry for applications similar to this project. Parkson has not performed sampling or testing on the subject influent water, nor has any test data been made available to Parkson in the development of this project.

The process guarantee shall include the costs of corrective actions to remedy any process deficiencies, under the stipulations set forth in the above, whether the deficiencies are due to defective materials, or workmanship. The owner shall not incur any costs, (within the one year warranty period), associated with the repairs of any process deficiencies, whether it is labor, per diem costs travel, or shipping charges. Parkson shall be held liable for the complete function of the Parkson supplied equipment for a period of (1) year from the date of commissioning.

Mandatory Operating Data. The minimum operating data to be collected and reported by the owner to Parkson in writing in a coherent and timely manner is as follows: .

Influent Conditions: flow rate, suspended solids, precipitable phosphorus, total phosphorus, water temperature, alkalinity, pH

Operation Parameters: Alum dosage, polymer type and dosage prior to Filters, turbidity prior to Stage 1 Filter, turbidity and precipitable phosphorus prior to Stage 2 Filter, Stage 2 Filtrate turbidity and precipitable phosphorus, polymer type and dosage prior to Lamella, flash mix and flocculator speed settings, sludge withdraw rate and pump on/off periods

NOTE: All influent and effluent sampling and data will be based upon 24 hour composite sampling (whenever possible). Failure to provide this minimum level of performance and operating data will suspend the Cure-Period until such time as all data reporting is brought up to date completely or the process is confirmed to be operating as required by the Manufacturer.

Notice Requirements. In the event that the owner believes that the Equipment is failing to meet the above-guaranteed effluent limits,

Owner shall:

1. In writing, notify Parkson of the suspected problem and provide all facts and data and information necessary to verify the problem.
2. Provide other information on processing plant and treatment plant operation that may be required by the supplier to identify the cause of the problem.
3. Provide manpower as required to assist the supplier in determining the cause of the apparent problem.

Parkson shall:

1. Review all facts, data and information provided by the owner to determine the cause of the problem.
2. Recommend and perform any additional test work that may be required to determine the cause of the problem.
3. Make any changes to the Equipment necessary to correct the problem until the Equipment is meeting the guaranteed effluent values subject to the above influent parameters being met. Should the problem be identified as the Influent Parameters not meeting those stated above, the owner shall be responsible for making any necessary corrections.
4. Subject to the influent parameters being met, all charges incurred by Parkson in correcting the system process or equipment, including Parkson's engineering time and travel expenses, any recommended test work, modifications to existing equipment or

addition of new equipment, freight expense, and installation cost, up to the value of the original purchase order for equipment shall be for Parkson's account.

5. Subject to the influent parameters being met, if after determining the cause of the problem, and spending substantial effort to correct the problem, it is not feasible to do so with the Equipment, the purchase price of the equipment will be refunded upon return of the equipment. Parkson reserve the right to modify or change the Equipment at its discretion to improve the safety, operation, or usefulness of the product.

If, after review of existing data or performance of additional recommended test work, the results indicate the Equipment is meeting the guaranteed effluent values, then the cost of reviewing this data and performing any additional test work, including engineering time, travel expenses and test costs, shall be for the owner's account.

Conditions of Performance Guarantee. The Performance Guarantee described herein shall be null and void if any of the following conditions are not met:

1. Feedwater characteristics must be equal to the Water Source and pursuant to the Maximum Influent Values.
2. The Equipment shall be maintained in a condition as outlined in the O&M.
3. The System is to be operated only by trained personnel who are fully familiar with the O&M in the absence thereof, follow generally accepted industry practices.
4. Equipment operators shall not operate the Equipment outside the operational limitations as defined within the O&M or as provided herein, or subject the Equipment to accident, alteration, abuse and/or misuse.
5. Parkson shall be provided working access to the allegedly defective or non-conforming Equipment to any extent necessary for Parkson to perform its obligations hereunder.
6. Unauthorized alterations to or modifications of the Equipment not approved by Parkson, in writing.

Cure Period. Parkson shall have thirty (30) days from the date of receipt of Notice (as outlined above) to submit a written plan outlining the actions necessary to cure any alleged problems with the Equipment. Parkson shall have an additional thirty (30) days beyond the initial thirty (30) days, sixty (60) days total from the date of receipt of Notice, to cure any alleged problems with the Equipment. However, if Parkson deems that the alleged problems are not curable within sixty (60) days, then Parkson shall work in conjunction with the project engineer in developing an action plan to cure such problems within a reasonable time. Disasters, whether natural or manmade, such as fire, flood, wind, earthquake, cave-in, lightning, war, or vandalism shall toll the Cure Period until such time as such Disaster is over and testing of the Equipment can be performed.

Limitation of Default. In the event Parkson is unable to cure problems with the Equipment within the Cure Period as outlined above, and in the event that no other entity has caused problems with Equipment performance, Parkson's total aggregate liability shall be limited 100% of the contract price.

Notes. Parkson does not accept liability for any corrective work or expenditures of any kind that have not been authorized by Parkson in writing prior to the commencement of such work and

N.W. 62ND STREET LAUDERDALE FL, 33309-1771 | MAILING ADDRESS: P.O. BOX 408399 FT. LAUDERDALE, FL 33340-8399 | TELEPHONE 954 974-66 | FAX | AN AXEL JOHNSON INC. COMPANY

PARKSON CORPORATION

prior to committing to such expenditures. This performance guarantee does not cover failure of normal wear and tear.

NO GUARANTEES OTHER THAN THOSE EXPRESSLY PROVIDED IN THIS DOCUMENT ARE PROVIDED BY PARKSON. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. PARKSON SHALL HAVE NO LIABILITY FOR SPECIAL, INCIDENTAL, EXEMPLARY, PUNITIVE OR CONSEQUENTIAL DAMAGES RESULTING FROM A BREACH OF THIS PERFORMANCE GUARANTEE OF FROM THE USE OF THE PARKSON EQUIPMENT.

COMPARISON OF CURRENT WASTEWATER CHARACTERISTICS TO BASIS OF DESIGN & ACTUAL WASTEWATER TREATMENT PLANT CAPACITY

Sorrento Lactalis - Nampa, Idaho

Parameter	Design Report Basis Of Design	Anticipated Effluent, mg/l	Comments
FLOW			
Average Daily Flow, gpd	500,000	-	
Maximum Daily Flow, gpd	775,000	-	
Average BOD, lb./day[1]	8,760		To be determined by the NPDES Permit.
Daily Max. BOD, lb./day[1]	20,820		To be determined by the NPDES Permit.
Average COD, lb./day	14,600		To be determined by the NPDES Permit.
Daily Max. COD, lb./day	34,700		To be determined by the NPDES Permit.
TSS, lb./day[2]	Not Given		To be determined by the NPDES Permit.
TKN, mg/l	101		To be determined by the NPDES Permit.
Phosphorus, mg/l	35	0.07	This limit is guaranteed by Parkson.
Chloride, mg/l	766	766	The plant is not designed to remove chlorides.

[1] BOD/COD assumed to be 0.6.

[2] Suspended solids are not a critical design parameter as they become enmeshed with the biological floc (MLSS) in the aeration tank and are removed in the clarifier and sand filter.

TEV;car
I.D.\AGREEMENT\OWNER-MISC\S0098\910171\A191-Part2 (Exhibits)-Rev-TEV.doc

C

APPENDIX C

PARKSON COMMUNICATION DOCUMENT

Jenchie Wang

From: Brett Boyd [BBoyd@parkson.com]
Sent: Monday, November 10, 2008 1:31 PM
To: Tim Cornelison (waterservicestc@aol.com)
Cc: Tom Bachman; KShaw@sorrentolactalis.com; Jenchie Wang; Robert Jeyaseelan
Subject: RE: DynaSand D2 at Sorrento-Lactalis Cheese Plant in Nampa, Idaho

Tim:

At this site, there are a pair of DSF-100DBTF square package units (each with four DSF-19-sized washers), followed by a pair of DSF-100SBTF square package units (also, each with four DSF-19-sized washers). The reject from all four of these filters is combined, and fed to a Lamella, model LGS-300/55, with a flash mix/flocculator. Based upon the reports from the field, there was an insufficient elevation difference between the DynaSand Filters and the Lamella, to allow for adequate DynaSand reject flow to the Lamella. Modifications were recently made to the Lamella, such that the reject flow from the DynaSands to allow for an average of 7.8 gpm per each of the 16 washers. Such a reject rate should now allow for better separation between the sand grains and the iron-based waste particles.

If you need more background, please don't hesitate to ask me.

Thanks, Brett

-----Original Message-----
From: Jenchie Wang [mailto:Jenchie.Wang@SYMBIONTONLINE.com]
Sent: Monday, November 10, 2008 11:17 AM
To: waterservicestc@aol.com
Cc: Tom Bachman; Brett Boyd; KShaw@sorrentolactalis.com
Subject: RE: DynaSand D2 at Sorrento-Lactalis Cheese Plant in Nampa, Idaho

Tim, Symbiont was retained by Sorrento-Lactalis at Nampa, ID to evaluate its wwtp capacity for achieving 0.07 mg/L of phosphorus discharge limit. A feasibility report must submit to the USEPA in the beginning of December.

We are to optimize its SBR sequence for bioP; therefore, to reduce the ferric usage prior to the D2 system. We realize that the D2 system is the key element for them to achieve 0.07 mg/L consistently. I believe Brett have forwarded you the issues encountered. I want to re-address the following background with questions, and look for your comments:

1. Sorrento has increase the D2 backwash rate to 125 gpm on 11/6, as Brett suggested.
2. It is suspected that the sand may have some slime sludge attached on it, causing some phosphorus release overtime. Sorrento is to clean the sandfilter with sodium hypochlorite (12.5%).

What is the suggested dosage (ppm) and contact time "kill" the slimy sludge? What dosage to be applied to "control" the possible slimy sludge in future?

3. Sorrento is to apply PAC (other than Ferric) into the D2 floc tank for phosphorus removal, as suggested by Parkson.

What is the optimal floc tank contact time for the PAC- phosphorus reaction? Need to be aware that they are still apply ferric chloride (40-60 gpd) upstream of the D2 for either phosphorus reduction or settlability control. Is there any alum-ferric reaction causing either p removal and/or turbidity concern? Need any polymer or coagulant other than PAC?

A pre-requested (by Parkson) phosphorus input is 2.0 mg/L into the D2 to achieve 0.07 mg/L. A 0.6 MGD influent flowrate with 35 mg/L of P. 4-6 mg/L of P after the bioP SBR. 0.5-1.5 mg/L of P goes into the D2. 0.2 mg/L P in the final with approx. 5 mg/L of TSS. I suspect most total P comes from the particular P due to the TSS. However, The lab results still showed high soluble P (0.07 - 0.2 mg/L) in the final effluent, though the accuracy are suspicious. Sorrento is requesting a low LDM method for p analysis.

Our goal is to make Sorrento achieving <0.07 mg/L of P "consistently". Please comment or if you need a conference call for more background. jenchie

Jenchie Wang, Ph.D.
Process Engineer
Symbiont
6737 W. Washington Street
Suite 3440
West Allis , WI 53214
P: 414.755.1113
C: 414.719.1640
F: 414.291.8841

-----Original Message-----
From: Tom Bachman
Sent: Thursday, November 06, 2008 6:33 PM
To: Jenchie Wang
Subject: Fw: DynaSand D2 at Sorrento-Lactalis Cheese Plant in Nampa, Idaho

Fyi

----- Original Message -----
From: Brett Boyd <BBoyd@parkson.com>
To: Tom Bachman
Cc: jon@selg.us <jon@selg.us>; gselg@SELG.us <gselg@SELG.us>; jeff@selg.us <jeff@selg.us>; Mike Jakob <MJakob@parkson.com>; Robert Jeyaseelan <RJeyaseelan@parkson.com>; Sean DSilva <SDSilva@parkson.com>; Kurt Shaw (kshaw@sorrentolactalis.com) <kshaw@sorrentolactalis.com>; Tim Cornelison (waterservicestc@aol.com) <waterservicestc@aol.com>
Sent: Thu Nov 06 17:29:33 2008
Subject: RE: DynaSand D2 at Sorrento-Lactalis Cheese Plant in Nampa, Idaho

Tom:

It was good to speak with you this evening. Sorry I didn't hook up with you sooner to include the other interested parties into our conversation. I believe that you and I are on the same wavelength as to what is needed to finish getting this system lined out and producing acceptably low phosphorus levels (<0.07 mg/L). The answer should be a combination of the increased filter backwash rates (now at 125 gpm thanks to the Lamella modifications made by Kurt) and the addition of PAC right before the filters to precipitate the remaining phosphorus (yet to be applied). The sand filters can ONLY have a chance at removing phosphorus that has been precipitated, and is blind to any phosphorus that is in the soluble phase. The samples that you collected for outside analyses should provide us with some answers.

An occasional shock treatment of chlorine will not hurt the filters. From your description, the first stage filters may need it as a possible way to rapidly get rid of the thick slime coating on the inside surfaces. Simultaneous agitation with air-lancing should help in this cleaning process.

As I mentioned, Tim Cornelison of New York is a master with such systems, and I encourage you to discuss the issues in more detail with him. His contact info is attached.

Please feel free to contact me at any time to discuss this matter further.

Thanks, Brett

Brett Boyd

Process Leader | Parkson Corporation | Website www.parkson.com <http://www.parkson.com/>

Office +1 954.917.1895 | Cell +1 954.415.8801

Jenchie Wang

From: KShaw@sorrentolactalis.com
Sent: Thursday, October 23, 2008 3:00 PM
To: Jenchie Wang
Subject: Fw: Poor Performance of D2 System at Sorrento Lactalis Cheese Plant in Nampa, ID
Attachments: pic22648.gif

----- Forwarded by Kurt Shaw/LactalisGroup on 10/23/2008 01:59 PM -----

Brett Boyd
<BBoyd@parkson.com>

10/10/2008 03:05 PM

To"Kurt Shaw (kshaw@sorrentolactalis.com)" <kshaw@sorrentolactalis.com>

cc"Jeff Belnap (jeff@selg.us)" <jeff@selg.us>, Mike Jakob <MJakob@parkson.com>, Barbara Hill <BHill@parkson.com>, Sean DSilva <SDSilva@parkson.com>, Robert Jeyaseelan <RJeyaseelan@parkson.com>, Russ Cook <RCook@parkson.com>, Pavol Plecenik <PPlecenik@parkson.com>

SubjectRE: Poor Performance of D2 System at Sorrento Lactalis Cheese Plant in Nampa, ID

Kurt:

Per our brief conversation this afternoon, please let me know a good time to discuss the process issues and ideas with you in more detail. If next week is good for you, I plan to be in the office next Monday through Thursday. As I stated, with the combined ideas discussed the last time we spoke two weeks ago, and the additional ideas that I mentioned in yesterday's email (below), I believe we have a good chance of resolving the challenges you've faced with the system.

Thanks, Brett

From: Brett Boyd
Sent: Thursday, October 09, 2008 2:32 PM
To: Kurt Shaw (kshaw@sorrentolactalis.com)
Cc: Jeff Belnap (jeff@selg.us); Mike Jakob; Barbara Hill; Sean DSilva; Robert Jeyaseelan; Russ Cook; Pavol Plecenik
Subject: RE: Poor Performance of D2 System at Sorrento Lactalis Cheese Plant in Nampa, ID

Kurt:

As promised, I'm following up with our conversation of two weeks ago. Have you been able to apply my ideas since we spoke? If so, what was the outcome, if any?

I just had a meeting with three others at Parkson specifically on your situation, and got some fresh ideas and thoughts. I will call you tomorrow to discuss, but I wanted to give you a heads up.

Thought 1 – IF the filter backwash flow rate is insufficient to separate the sand particles from the iron-based "dirt" particles, then there should be a measurable amount of iron present in the filtrate. Do you know if that was, or is, the case? If so, an increase in the backwash rate may/should improve the filtrate quality.

Thought 2 – After telling them that the filter backwash flow to the Lamella backs up because there is insufficient elevation to feed an increased backwash flow rate, one suggestion was to lower or remove the Lamella weir plate. This drop in Lamella weir elevation may alone be enough to allow for a sufficient increase in sand filter backwash flow. I think that the weir plate between the flash mixer and flocculator is already low enough that it would not need to be also reduced (by cutting). Another way to further reduce the Lamella "hurdle", would be to ream out the "orifice holes" in the bottoms of the effluent troughs. By design, these holes produce 2 to 4 inches of headloss. Larger holes would reduce the "hurdle" by another 2-3 inches, IF NEEDED.

Thought 3 – Do you have evidence that all of the phosphorus in the filtrate is insoluble/precipitated? I imagine that with all of the ferric that is added, all of the phosphorus is precipitated out, but this was a question in this brief meeting I just had that I didn't know for sure off the top of my head.

What time would be good to talk to you tomorrow? If, by chance, you are not working tomorrow/Friday, when is a good time for you to do so?

Thanks, Brett

Brett Boyd
Process Leader | Parkson Corporation | Website www.parkson.com
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From: Brett Boyd
Sent: Friday, September 26, 2008 6:37 PM
To: Kurt Shaw (kshaw@sorrentolactalis.com)
Cc: Jeff Belnap (jeff@selg.us); Mike Jakob; Barbara Hill; Sean DSilva; Robert Jeyaseelan
Subject: RE: Poor Performance of D2 System at Sorrento Lactalis Cheese Plant in Nampa, ID

Kurt:

It was good to finally connect this afternoon/evening on the phone. Thanks for taking the time to explain the situation with the Parkson DynaSand D2 at your plant, as well as all of your frustrations. As promised, following are the notes of our conversation:

You've been an operator there for 15 months now. There have been turnovers of operators and plant managers since Parkson was there last. However, you are QUITE familiar with DynaSand Filters, as you've operated the filters at Foremost Farms in Lancaster, WI. Consequently, upon your arrival 15 months ago, you took the filters from being unable to receive the flow (typically 530-540 gpm feed and 453 gpm filtrate), to where they now stand with 11.8 inches of head loss in stage 1 at 2.65 gpm/sf and 9.8 inches of head loss in stage 2 at about 2.5 gpm/sf. This info, combined with the fact that you state that the beds are essentially free of solid spots, is a clear indication that your air lance efforts have paid off. However, since often times you have 0.9 mg/L of phosphorus coming into the filter, and still have 0.7-0.8 mg/L in the filtrate, when you NEED 0.07 mg/L phosphorus in the filtrate, the performance is FAR from satisfactory. As I stated, with a reject of about 85 gpm, that averages out to 5.3 gpm per module. The recommended range of reject for these units is 5-8 gpm each, depending upon the nature of the "dirt" that is being separated from the sand grains. For an iron-based "dirt" such as what you have with the ferric addition, my natural tendency is to be closer to the 8 gpm end of the range, since the solids tend to have a quicker than normal settling velocity. With that stated, you responded that at a total reject rate of about 115 gpm, the reject flow backs up from the Lamella to the second stage filters due to (what you could tell is about) only a 4 to 5 inch differential head between the second stage reject weir elevation and the top of the flash mixer before the Lamella. This makes it impossible to increase the reject flows to ALL of the filters to a level that I would like to test. Since there are two trains of filters (each train has one DSF-100DB followed by a DSF-100SB), one of my recommendations is to shut off one train, and put all of the flow thru the other train, with the reject weirs reduced to a level that will produce more like 7-8 gpm of reject from each module. A second recommendation is to have your chemical rep bring in some Poly Aluminum Chloride (or "PAC"), and give that a try. Additionally, since the Lamella receives 4.7 mg/L of phosphorus, and typically the Lamella overflow still contains 2.7-2.8 mg/L, rather than returning the overflow to the feed of the DynaSands (as was intended), you found it better to pump the Lamella overflow back to the head of your entire treatment plant.

The 0.07 mg/L phosphorus limit goes into effect on January 1, 2010. However, if this required performance is not achieved soon, you stated that you will recommend a membrane system, or the like to replace the Parkson D2. Additionally, you tell anyone that calls that you would NOT recommend DynaSand Filters or a D2. Finally, your airlifts last only 18 months.

I think that about covers everything. If I've missed something or stated something incorrectly, please feel free to correct me.

Please give my two suggestions a try, and stay in touch. I'm very interested to know if either or both of them make a marked increase in the performance of the equipment. The only other idea that I had was to lower the Lamella, but hopper is already at the floor level... making the idea not impossible, but costly and difficult. I'm on the road most of next week (again), but I will respond to correspondence from you as soon as possible.

Thanks, Brett

From: Brett Boyd
Sent: Monday, September 22, 2008 3:26 PM
To: Robert Jeyaseelan
Cc: Jeff Belnap (jeff@selg.us); Mike Jakob; Barbara Hill; Sean DSilva
Subject: RE: Poor Performance of D2 System at Sorrento Lactalis Cheese Plant in Nampa, ID

Robert:

I called the operator, Kurt Shaw, three times this afternoon, but was only able to leave him messages.

I called Jeff Belnap (our Industrial rep) back, and told him. I also asked him for a brief idea of the status. Jeff reported the following:

- The last operator (now gone) had grossly overdosed the chemicals, and fouled up the sand beds.
- Kurt air-lanced the beds, but thinks that they are still in need of a lot more work.
- The operator wants to know if he should chemically clean the beds, or completely replace the beds.
- PEOPLE ARE STEADILY CALLING THIS SITE, AND ASKING KURT SHAW ABOUT THIS PARKSON D2/P-REMOVAL REFERENCE. KURT IS TELLING EVERYONE STRAIGHT WHAT HE THINKS, AND ITS NOT GOOD.

I have left Kurt with my name and cell number. One way or another, I will speak in detail with him today or tomorrow. Jeff wants to know if/when I will be able to make it to the site to assist first-hand.

Thanks, Brett

From: Brett Boyd
Sent: Monday, September 22, 2008 12:16 PM
To: Robert Jeyaseelan

Cc: Mike Jakob; Steve Rothenberg
Subject: FW: Poor Performance of D2 System at Sorrento Lactalis Cheese Plant in Nampa, ID
Importance: High

Robert:

Let's discuss this today before I leave for MD. In addition to the email below from Mike Jakob, I got a (I'm sure related) call from Jeff Belnap of Selg and Associates (phone 678-642-6401). Jeff says that the operator (Kurt Shaw, 208-467-4424, I think?) was promised a trip by someone at Parkson a few months ago, and no one has gone. Finally, Steve Rothenberg also asked me about this site this morning, and I again imagine that it's all related. Our rep, Jeff, wants me to call him back today to let him know our response, or lack of one.

I plan to call the operator today, regardless, to discuss. Ideally, I would be able to tell the operator what days or what week to expect a visit.

Thanks, Brett

Brett Boyd
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From: Mike Jakob
Sent: Monday, September 22, 2008 8:35 AM
To: Brett Boyd
Subject: RE: Cheese Plant in ID

Hi Brett,

I received a call from the operator, and he still has not received a call from Parkson to help him in achieving his permit P level. Brett, this is getting ugly, and we need to address this. Please do your best to contact the plant this week.

Thanks,

Michael

From: Brett Boyd
Sent: Wednesday, June 04, 2008 9:01 AM
To: Tim Cornelison (E-mail)
Cc: Madhavi Batchu; Tom Grubb; Mike Jakob
Subject: RE: Food Industry - filtration for P

Tim:

Do you have some convincing < 0.02 ppm P filtrate data from the D2/DS installations in NY?

If so, could you attach it electronically in a response email, and copy Madhavi, Tom, and me?

Also, our D2 system at the cheese plant in Idaho is not reliably meeting the 0.07 mg/l P filtrate requirement. They are using ferric. Do you think the results would improve with PAC?

Thanks, Brett

-----Original Message-----
From: Tom Grubb

Sent: Wednesday, June 04, 2008 8:14 AM
To: Brett Boyd
Cc: Madhavi Batchu
Subject: RE: Food Industry - filtration for P

Brett,
What do you have to support DSF treatment to <0.02ppm P?
Please advise
Thanks
Tom

From: John Tremblay
Sent: Tuesday, June 03, 2008 11:03 PM
To: Tom Grubb
Cc: Madhavi Batchu
Subject: FW: Food Industry - filtration for P

We need some data for Bill Lowe on how good D2 quality can be ... He is looking for data to support < 0.02 ppm P.

Do we have Spokane WA data or long term data from NY Watershed area where dual sand has been run ?

Check with Jean Grenier.

Thanks.

John F Tremblay
Kershner Environmental Technologies, L.L.C.
Ph / Fx : (610) 351-0963
Mobile: (610) 392-1863
WWW.KETLLC.COM

From: Lowe, William [mailto:William.Lowe@WestonSolutions.com]
Sent: Tuesday, June 03, 2008 8:22 AM
To: j.tremblay@ketllc.com
Subject: RE: Food Industry - filtration for P

Thanks John I would like to get some test data, test reports, case suited etc supporting the 0.02 ppm performance - got a couple of jobs where it might be applicable, but need hard data.

William L. Lowe, Ph.D., P.E., DEE
Technical Director
Weston Solutions, Inc.
610-701-3762 (Office)
302-229-2290 (Cell)

From: John F Tremblay [mailto:j.tremblay@ketllc.com]
Sent: Tuesday, June 03, 2008 1:30 AM
To: Lowe, William
Subject: Food Industry - filtration for P

Bill:

We have some new staff working this area for Parkson. You requested some filter information earlier in May. This took a while to define.

You advised P < 0.8 ppm and N < 6 ppm from bio process.

I have reviewed three technologies from Parkson capable of providing a technical solution.

The D2 system requested in your email: this process is suitable for achieving < 0.02 ppm P. A two step process using sequential staging of the Dynasand process combined with a plate settler for recovery of backwash and limiting the net losses to < 1% of forward flow. The most expensive filtration but also the most efficient.

The singe step Dynasand deep bed filter. With chemical addition this has been shown to achive < 0.3 ppm P while also providing denitrification polishing stepp of < 3.0 ppm total N as NOx

The last filter options is DynaDisc cloth filter (outside to in). The least expensive filter for meeting P of .3-0.5 ppm P total. No denite is enabled as this filter has not hold up time.

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